SUSTAINING QUALITY PERFORMANCE IN CIVIL ENGINEERING IN THE CAGAYAN VALLEY REGION

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Abstract— **The study navigated along the five ISA areas of management in sustaining quality performance in civil engineering in the Cagayan Valley Region. The study utilized a quantitative research design to analyze the status of management in HEIs offering BSCE in Region 2 for the past five years. The respondents of the study were the CE passers from 2014 to 2019, CE instructors, CE program chairs/heads, and deans. Four CE schools participated in this study, along with 390 respondents composed of alumni, faculty, program chairs/heads, and deans. The study revealed that the civil engineering schools in the region have displayed a strong commitment to the five ISA areas of management in sustaining quality performance in civil engineering. The implications of the results of the study for CE education, particularly in sustaining quality performance, will be ascertained.**

Keywords: Institutional sustainability, Civil Engineering, Civil Engineering Education, Higher Education Institutions (HEIs)

I. INTRODUCTION

Higher Education Institutions (HEIs) are responsible for the development of graduates who contribute to the social and economic development of the country. In this aspect, the academic performance of graduates plays a very important role. One way to measure the quality performance of graduates is by passing the board examination. The Licensure Examination for Engineers is a tool that measures and ensures the quality of engineers who will join the workforce of various manufacturing industries in the Philippines and abroad. The Professional Regulations Commission (PRC), as the duly constituted body created for this function, has been consistent in its task of screening who among the graduates from all board courses will be granted professional licenses based on the board examination results (Laguador & Dizon, 2013). In today's rapidly changing technological world, competitive advantages depend largely on the quality of labor resources and investments in human capital, which are provided through education. In this regard, issues related to factors, criteria for determining the quality of training in higher education institutions, and the main trends in their development are becoming relevant.

The sustained promotion of national development is the fundamental concern of government, business, and education. The three sectors are the tri-motive generators of the development process. Government, business, and education interact with and support one another. The interactive and supportive roles of the three sectors are of paramount importance in the planning, implementation, and attainment of national development goals. The homogeneity and cohesiveness of the unified action of the three ensure the movement of the national economy away from poverty and stagnation. Development and growth should not be left to chance; they could be planned and controlled in a rationally meaningful way (Gutierrez, 2016).

The government's effort to bring about the social and economic development of the country, particularly in the field of education, is manifested in the recent passage of Republic Act 7722, creating a Commission on Higher Education. This act is expected to address the apparent failure of our schools and universities to provide quality education consistent with the country's development goals. The Commission on Higher Education, through the efforts and recommendations of the Technical Panel for Engineering and Technology (TPET), has released a series of memoranda for compliance by all engineering schools offering baccalaureate engineering programs. The CHED Memorandum Order (CMO) mandated engineering schools to follow a new set of policies, standards, and guidelines for all baccalaureate engineering programs that defined the needed competencies for the practice of each engineering field and a set of program outcomes that engineering students in the different fields are expected to possess by the time they graduate (CMO No. 37, s.2012).

Raising the quality of higher education institutions is thus one of the motivations behind why government agencies such as the Commission on Higher Education are constantly finding ways to address the issue. Reforms are being set in place, such as rationalizing the structure of public higher education and improving the higher education budget to ensure resource mobilization and cost-effectiveness (Conchada & Tionco, 2015). However, these reforms will not be enough if HEIs themselves are not pressured to constantly improve and set standards above the minimum requirement. CHED encourages institutions that want to satisfy higher quality criteria than those necessary to receive governmental recognition to participate in voluntary accreditation programs. The pursuit of excellence is one of the main goals of almost all educational institutions. At the same time, the expansion, diversification, internationalization, privatization, and globalization of higher education systems have also generated growing worldwide concern for the quality of higher education processes. Moreover, higher education institutions are now faced with challenges of accountability, value-adding, and transparency (Ching, 2013).

At present, the quality and accessibility of education are key factors in the country's competitiveness. Attention is paid to the concept of the quality of education, and interpretations by various scientists and specialists are given. It is noted that the quality of education depends first and foremost on the competence and experience of the teacher and the modern technologies used in teaching methods (Baitanayeva et al., 2020). The need for education about, and for, the environment and sustainable development (SD) has been recognized. During the last decade, an increasing number of universities have been engaging with sustainability by incorporating sustainability concepts into their systems (including curricula, research, campus operations, outreach, as well as into their assessment and reporting) (Lozano & Lozano, 2014).

Through the various Professional Regulatory Boards (PRBs), PRC regulates the practice of Civil Engineering. Insofar as PRC's issuance of a professional license is publicly recognized as certifying that those granted the license have successfully achieved specific learning outcomes that would allow them to demonstrate the full independence necessary to practice their professions in the Philippines and in other countries that now require PRC licensure of Filipino professionals, the license has effectively been considered an added qualification to the baccalaureate degree for the technical and other professional fields.

Throughout the years, engineering programs have changed rapidly due to some external and internal factors. As a result, engineering schools came up with responsive programs and initiatives to cope with the demands of the fast-changing world. However, results of recent studies and literature reveal that there is a decrease in the quality of engineering education being offered by schools (Laguador & Dizon, 2013). One of these criteria is the continuous decrease in board performance among engineering graduates from different engineering programs, such as in electrical engineering, electronics engineering, chemical engineering, mechanical engineering, and civil engineering (Flores, 2020). Among the different engineering programs being offered in the Philippines, civil engineering is considered the most popular due to the high number of enrollees in different engineering schools (Chavez, et al., 2016).

However, the data reveal that the majority of civil engineering schools in the Philippines obtained below the national passing rate in the CE licensure examinations, as revealed in the 2018 CE Board Examination (PRC, 2018). In fact, of the 275 Civil Engineering Schools in the country, only six schools were part of the PRC Top Performing list. Additionally, only a few schools are accredited by national and even international accreditation bodies such as PAASCU, PACUCOA, AACUP, and the Washington Accord. As of 2022, fewer than 10 schools have a Center of Development and Center of Excellence in Civil Engineering (CHED, 2022). In the Cagayan Valley Region, there are 11 colleges and universities offering the Civil Engineering program. Furthermore, only 4 schools in the region achieved an average rating above the national passing rate before and during the COVID-19 pandemic (2015-2022). Finally, due to the low passing rate in civil engineering board examinations, two schools in the region had no takers for the civil engineering board examination.

Given these scenarios, there is a need to investigate how these few high-performing civil engineering schools maintain the quality of engineering education responsive to the needs of their students. This proposed study will explore the factors affecting the management and supervision of high-performing civil engineering schools in the Cagayan Valley Region. The selection of the proposed engineering schools to be part of the study will include those with consistent high performance in the board examination for the past five years and a high current level of accreditation from accrediting bodies and agencies.

II. METHODS

This study utilized a descriptive-correlational technique to examine the relationship between school characteristics and the indicators of institutional sustainability, as well as PTC criteria on student outcomes. Documentary analysis was also employed to gather evidence from official documents that were made available. The study was conducted among Higher Education Institutions in Region 2 that offered a BS in Civil Engineering and consistently performed well in the CE Board Examination.

The respondents of the study included academic deans, program chairs/heads, teachers, and alumni. Their responses provided data and information on the practices of the schools related to the civil engineering program. The perspective of the alumni offered a retrospective evaluation of the school's educational quality, as well as insights into the long-term impact of civil engineering education.

The main instruments used in the study were researcher-made questionnaires for administrators, teachers, students, and alumni. These were based on CHED's instrument for evaluating institutional sustainability and the learning outcomes criteria set by the Philippine Technological Council. Part I of the questionnaires gathered basic information about the school and/or the respondent. Part II enabled respondents to evaluate the school's sustainability areas using a Likert Scale with values ranging from 0 to 4, as follows:

4 – The criterion/criteria for the indicator was/were fully met, and its elements were achieved at a level of excellence that provided a model for others.
3 – The criterion/criteria for the indicator was/were met, with most elements demonstrating good practice.
2 – The criterion/criteria for the indicator was/were met in most respects, but improvement was needed to overcome weaknesses in some elements.
1 – The criterion/criteria for the indicator was/were met in some respects, but significant improvement was needed.
0 – The criterion was not met.

Part III allowed respondents to determine the extent to which the school developed learning outcomes among engineering students using the following guide:

5 – To a very great extent
4 – To a great extent
3 – To some extent
2 – To a little extent
1 – Not at all

The researcher-made questionnaires were subjected to content validation by the adviser, the dissertation panel, and a sample of teachers and school heads who were not part of the target population.

Data Analysis

Frequency and percentage were used to describe the profile of schools offering BSCE and the profile of the respondents.

The weighted mean was utilized to determine the factors affecting the board examination performance of HEIs offering BSCE, using the following mean range and qualitative descriptions:

Mean Range	Qualitative Description
3.50 – 4.00	To a very great extent
2.50 – 3.49	To a great extent
1.50 – 2.49	To a lesser extent
1.00 – 1.49	No extent at all

An Independent Sample T-Test and One-Way Analysis of Variance were used to determine significant differences in the factors affecting the performance of CE board passers when grouped according to profile variables.

III. RESULTS

Table 1. Status of Civil Engineering Schools in terms of the Institutional Sustainability Areas

Areas	Mean	Qualitative Description
Governance and Management	3.42	Met demonstrating good practice
Quality of Teaching and Learning	3.49	Met demonstrating good practice
Quality of Professional Exposure, Research, and Creative Work	3.39	Met demonstrating good practice
Support to Students	3.38	Met demonstrating good practice
Relations with Community	3.50	Fully Met
Overall Average	**3.44**	**Met demonstrating good practice**

Table 1 presents the status of civil engineering schools in terms of the different areas of institutional sustainability. The results indicate that the various civil engineering schools fully met the requirements for institutional sustainability in relation to community engagement. Specifically, civil engineering schools in the Cagayan Valley Region offer programs that consider the social, cultural, economic, and developmental needs of the country at local, regional, and national levels, as reflected in the HEIs' vision, mission, and goals (VMG), and in consideration of the country's need to compete effectively in global markets. Additionally, these institutions are recognized as valuable partners by other higher education institutions, as well as by professional, governmental, and non-governmental organizations and industries, both within the Philippines and internationally. More importantly, these institutions are regarded by their local communities as providers of extension programs that respond to community needs, particularly in promoting empowerment and self-reliance.

Meanwhile, civil engineering schools met the standards for demonstrating best practices in governance and management, quality of teaching and learning, quality of professional exposure, research and creative work, and student support. In terms of governance and management, the institutions' governance frameworks demonstrate probity (i.e., uprightness, honesty, and adherence to strong moral principles), integrity (i.e., consistency of actions with ethical values), strategic vision, accountability (i.e., an institution's willingness to account for its actions, accept responsibility, and disclose results), risk awareness and management, and effective performance monitoring. Furthermore, the institutions' management of operations, financial control, and quality assurance systems enable them to adapt to development and change. In addition, these institutions implement mechanisms that enhance operational efficiency, quality, and institutional growth, including the integration of Information and Communications Technology (ICT) for more effective management and the adoption of viable, sustainable, and appropriate resource-generation strategies to support institutional development.

With regard to the quality of teaching and learning, the institutions' processes for approving and implementing civil engineering programs ensure that these programs align with the HEIs' VMG, as reflected in the intended competencies for graduates. These processes also take into account potential risks related to resource requirements and market demand, ensure effective implementation to achieve intended learning outcomes, and contribute to the region's and the country's development goals. Additionally, the institutions have established effective mechanisms for monitoring and reviewing programs, thereby enhancing their overall effectiveness. Furthermore, the civil engineering programs offered by these institutions undergo continuous improvement through targeted actions that address identified weaknesses, build on institutional strengths, and enhance both student and faculty performance. Notably, the quality of teaching and learning is largely attributed to the expertise and competencies of the civil engineering faculty. Moreover, student learning and performance are further enhanced through the effective utilization of learning resources, including library materials, laboratory facilities, and information and communications technology.

Regarding the quality of professional exposure, research, and creative work, civil engineering students develop relevant competencies through structured programs that provide opportunities for the practical application of their acquired skills. These include programs focused on entrepreneurship, practicum, internships, apprenticeships, and on-the-job training (OJT). In addition, the research communities within these institutions contribute to the advancement

of knowledge through relevant research and other scholarly activities. Simultaneously, these institutions produce creative works and innovations in fields such as the arts and humanities, science and technology, social sciences, and management science.

Finally, in terms of student support, civil engineering schools in the Cagayan Valley Region have demonstrated effectiveness in recruiting, admitting, supporting, and graduating students, including those from indigenous communities, individuals with disabilities, students from low-income backgrounds, foreign students, and other special groups. Furthermore, these institutions provide educational opportunities for highly capable and deserving civil engineering students through scholarship programs. Additionally, they implement student service programs designed to support students' non-academic needs.

Table 2. Licensure Examination of CE Schools for the Past Five Years

SY	National Passing Rate	School			
		1	2	3	4
2014-2015	41.50	49.00	86.00	48.00	60.00
2015-2016	45.90	57.00	74.00	65.00	56.00
2016-2017	48.81	77.00	59.00	62.00	55.00
2017-2018	45.09	55.00	65.00	53.00	55.00
2018-2019	43.18	36.00	53.00	53.00	65.00
Average	**44.90**	**54.54**	**67.41**	**56.25**	**58.32**

Table 2 presents the licensure examination performance of civil engineering (CE) schools over the past five years. The table displays the scores for each school in each academic year, as well as the average scores. The data indicate variations in licensure examination performance among the schools. School 2 consistently achieved higher scores compared to the other schools. School 1 recorded the lowest scores in the majority of the years, while Schools 3 and 4 ranked in between. Based on the average scores, School 2 obtained the highest average score of 67.41, followed by School 4 with an average score of 58.32. School 3 recorded an average score of 56.25, while School 1 had the lowest average score of 54.54. These results suggest that differences exist in the licensure examination performance among CE schools over the past five years. Schools 2 and 4 generally performed better than Schools 1 and 3. Additionally, the findings indicate that almost all civil engineering schools surpassed the national passing rates over the five-year period, except for School 1, which obtained a passing rate lower than the national passing rate for the 2018–2019 civil engineering licensure examination.

Table 3. Test of Significant Difference on the Status of CE Schools along the Institutional Sustainability Areas when Grouped According to Type of Institution

Institutional Sustainability Areas	**Type of Institution**	**Mean**	**t-value**	**p-value**	**Interpretation**
Governance and Management	Public	3.31	3.852	**.000**	Significant
	Private	3.52			
Quality of Teaching and Learning	Public	3.37	3.739	**.000**	Significant
	Private	3.60			
Quality of Professional Exposure, Research, and Creative Work	Public	3.32	2.082	**.038**	Significant
	Private	3.45			
Support to Students	Public	3.28	2.882	**.004**	Significant
	Private	3.47			
Relations with Community	Public	3.43	2.441	**.015**	Significant
	Private	3.56			
Overall Average	Public	3.34	3.417	**.001**	Significant
	Private	3.52			

$p<.05$ is significant.

Table 4 presents the significant differences in the status of civil engineering (CE) schools across various institutional sustainability areas, grouped according to the type of institution. The results indicate a significant difference in the status of CE schools across various institutional sustainability areas, including governance and management, quality of teaching and learning, quality of professional exposure, research and creative works, student support, relations with the community, and overall average when categorized by institution type. These findings are supported by probability values of .000, .000, .038, .004, .015, and .001, respectively. Hence, the null hypothesis is rejected. Specifically, the results reveal that school administrators and faculty members from private civil engineering schools provided a higher level of assessment regarding the status of CE schools across institutional sustainability areas compared to those from public schools.

Table 5. Test of Significant Relationship Between Licensure Examination Performance and the Status of CE Schools along the Institutional Sustainability Areas

Institutional Sustainability Areas	r-value	p-value	Interpretation
Governance and Management	.015	.775	Nor Significant
Quality of Teaching and Learning	.012	.818	Not Significant
Quality of Professional Exposure, Research, and Creative Work	-.023	.650	Not Significant
Support to Students	-.020	.697	Not Significant
Relations with Community	-.019	.714	Not Significant
Overall Average	-.008	.876	Not Significant

$p<.05$ is significant.

Table 5 presents the relationship between licensure examination performance and the status of civil engineering (CE) schools across various institutional sustainability areas. The results indicate that there is no significant relationship between licensure examination performance and the status of CE schools in the institutional sustainability areas of governance and management, quality of teaching and learning, quality of professional exposure, research and creative works, student support, relations with the community, and overall average. These findings are supported by probability values of .775, .818, .650, .697, .714, and .876, respectively. Hence, the null hypothesis is accepted. This implies that the data do not provide sufficient evidence to establish a meaningful connection between licensure examination performance and the status of CE schools in the specified institutional sustainability areas.

IV. DISCUSSION

Status of Civil Engineering Schools in terms of the Institutional Sustainability Areas

a. Governance and Management

Effective governance and management are crucial for the overall functioning and success of any institution. The results suggest that civil engineering schools have demonstrated good practices in governance arrangements by exhibiting probity and integrity. Probity refers to being upright, honest, and having strong moral principles, while integrity implies being honest and consistent in actions with values. These qualities are essential for building trust and credibility within the institution and among external stakeholders. The presence of a strategic vision indicates that these schools have a clear direction and goals for their development and growth. Additionally, accountability is another key aspect of governance, and the results show that civil engineering schools have mechanisms in place to ensure responsibility for actions and the disclosure of results.

Effective governance also involves the awareness and management of risk, as well as the monitoring of performance. By demonstrating these practices, civil engineering schools in the study have shown their commitment to identifying and addressing potential risks, ensuring the smooth functioning of operations, and continuously monitoring performance to achieve desired outcomes. This emphasis on risk management and performance monitoring is crucial

for maintaining institutional excellence and responsiveness to changing circumstances. The management of operations, financial control, and quality assurance arrangements is another area where civil engineering schools have demonstrated good practices. Effective management of operations ensures efficient and effective administration of the institution's resources and processes. Financial control practices contribute to the sustainability and viability of the institution, allowing it to support its development plans. Quality assurance arrangements ensure that the education provided by civil engineering schools meets high standards and continuously improves. These practices reflect the commitment of these schools to delivering quality education and enhancing their overall performance.

In addition to governance and management, the use of Information and Communications Technology (ICT) as an enabling feature indicates that civil engineering schools are embracing technological advancements for more efficient and effective management. The integration of ICT tools and systems can streamline administrative processes, facilitate communication, and enhance the overall operations of the institution. Moreover, the presence of viable, sustainable, and appropriate resource generation strategies is essential for supporting the development plans of civil engineering schools. These strategies enable the schools to secure the necessary financial resources to invest in infrastructure, faculty development, research initiatives, and student support services. The presence of such strategies indicates the schools' proactive approach to ensuring long-term sustainability and growth.

b. Quality of Teaching and Learning

The civil engineering program in the Cagayan Valley Region demonstrates good practices in terms of the quality of teaching and learning. The program approval and implementation process ensure alignment with the institution's Vision-Mission Goals (VMG), consideration of risks, effective implementation, and contribution to regional and national development needs. Additionally, the institution's effective monitoring and reviewing arrangements contribute to the overall effectiveness of the civil engineering program. These findings align with the existing literature on quality assurance and continuous improvement in higher education. Program approval and implementation are critical stages in ensuring the quality and relevance of an educational program. The results suggest that the institution has established processes that carefully approve and implement the civil engineering program. This includes ensuring that the program aligns with the institution's VMG, which reflects the desired competencies for graduates. By aligning the program with the VMG, the institution sets clear expectations for the knowledge, skills, and attributes that civil engineering graduates should possess.

Furthermore, the consideration of risks related to needed resources, potential market demands, and other factors is an important aspect of program approval and implementation. By addressing potential risks, the institution can make informed decisions and take proactive measures to mitigate challenges that may impact the quality and effectiveness of the civil engineering program. This highlights the institution's commitment to anticipating and responding to emerging needs and trends in the civil engineering field. The effectiveness of the civil engineering program is closely tied to its implementation and achievement of intended outcomes. The results suggest that the institution has established effective implementation strategies that contribute to the development needs of the region and country. This indicates the program's relevance and responsiveness to the demands of the local and national context, ensuring that graduates are equipped to address specific challenges and contribute to the development priorities of the region or country.

Continuous improvement is a fundamental principle in higher education, and the results indicate that the institution actively engages in effective actions to address weaknesses, build on strengths, and enhance student and faculty performance. This commitment to continuous improvement is essential for maintaining and enhancing the quality of the civil engineering program over time. By identifying areas for improvement and implementing appropriate measures, the institution ensures that the program remains relevant and of high quality in response to changing needs and emerging trends. The expertise and competence of the civil engineering faculty play a crucial role in achieving the quality of teaching and learning. The findings suggest that the institution's faculty roster consists of individuals with appropriate expertise and competence. This implies that the faculty members possess the necessary qualifications and knowledge in civil engineering to deliver high-quality instruction, mentor students effectively, and contribute to the overall educational experience.

The effective use of learning resources also enhances civil engineering student learning and performance. The results indicate that the institution provides access to learning resources such as library resources, laboratories, and information and communications technology. These resources support hands-on learning, research activities, and the acquisition of practical skills, all of which are vital in preparing civil engineering students for their future careers.

c. Quality of Professional Exposure, Research, and Creative Work

Civil engineering students in different CE institutions have opportunities for quality professional exposure, research, and creative work. These opportunities are crucial for developing relevant competencies, fostering innovation, and advancing scholarly activities. The results align with the existing literature on the importance of practical experience, research engagement, and creative exploration in higher education. Quality professional exposure is vital for civil engineering students to bridge the gap between theoretical knowledge and real-world application. The results indicate that the institution provides programs such as entrepreneurship, practicum, internship, apprenticeship, and on-the-job training (OJT) to facilitate students' practical learning experiences. These programs offer students the chance to apply their learned competencies in professional settings, gain industry insights, and develop skills that are highly valued in the civil engineering field. By engaging in these experiential learning opportunities, students are better prepared for the challenges and expectations of the professional world.

Research is a cornerstone of academic and intellectual growth. The results suggest that the institution's research community is actively involved in producing relevant research and engaging in advanced scholarly activities. Research in civil engineering contributes to the development and advancement of the discipline, addressing key challenges and exploring innovative solutions. By fostering a research-oriented environment, the institution enables faculty and students to contribute to knowledge creation, dissemination, and application within the field.

Creative work and innovation play a significant role in various disciplines, including civil engineering. The results indicate that the institution promotes creative work and innovation across different domains, such as the arts and humanities, science and technology, social sciences, and management science. This suggests a multidisciplinary approach to fostering creativity and innovation, allowing students and faculty to explore new ideas, develop novel approaches, and contribute to the advancement of their respective fields. Creative work and innovation in civil engineering can lead to the development of new construction methods, materials, or design solutions that address societal needs and challenges.

d. Support to Students

Civil engineering schools in the Cagayan Valley Region are effective in providing support for a diverse range of students, including those from indigenous groups, the handicapped, low-income groups, foreign students, and other special groups. These schools demonstrate a commitment to inclusivity, equity, and providing educational opportunities for all students. The results align with the existing literature on inclusive education, student support services, and scholarship programs. Recruiting and admitting students from diverse backgrounds is an essential aspect of creating an inclusive learning environment. The findings suggest that civil engineering schools in the region have effective recruitment and admission practices that enable them to attract students from various special groups, including indigenous communities, the handicapped, low-income groups, and foreign students. By actively reaching out to and admitting students from diverse backgrounds, these schools contribute to educational access and promote diversity within the civil engineering field.

Supporting and graduating students from special groups is crucial for ensuring their success and inclusivity. The results indicate that civil engineering schools in the region have effective support systems in place to assist students from diverse backgrounds throughout their academic journey. These support systems may include academic advising, mentoring programs, counseling services, and targeted interventions to address the specific needs of different student populations. By providing tailored support, these schools create a supportive and inclusive environment that promotes student retention and graduation.

In addition, the findings suggest that civil engineering schools in the region offer educational opportunities for academically talented and deserving civil engineering students. This is facilitated through student scholarship programs that provide financial support to deserving students. Scholarships can alleviate financial barriers and create opportunities for students to pursue their civil engineering education. By offering scholarships, these schools enable talented students, regardless of their socioeconomic background, to access quality education and develop their full potential.

Furthermore, the results highlight the presence of student services programs that cater to the non-academic needs of students. Student services encompass a wide range of support mechanisms, such as health services, career guidance, extracurricular activities, and campus facilities. These services contribute to the holistic development of students, foster a sense of belonging and well-being, and enhance the overall student experience.

e. Relations with Community

The results of the study indicate that civil engineering schools in the Cagayan Valley Region have demonstrated a strong commitment to institutional sustainability and effective community relations. These findings align with the existing literature on the importance of considering social, cultural, economic, and developmental needs in civil engineering education programs. Institutional sustainability refers to the ability of an educational institution to maintain its operations and contribute to the long-term development of its community. One aspect of sustainability is the alignment of programs with the needs of the country at various levels, including local, regional, and national. The results show that civil engineering schools in the Cagayan Valley Region have successfully integrated these considerations into their educational programs, as evidenced by the institutions' Vision-Mission Goals (VMG). The VMG of an institution often serves as a guiding document that outlines its commitment to addressing societal needs and challenges. The fact that the VMG of these civil engineering schools reflects the social, cultural, economic, and developmental needs of the country suggests that they are actively working toward sustainable development.

To compete effectively in global markets, it is crucial for educational institutions to equip their students with the skills and knowledge required in an increasingly interconnected and competitive world. The results imply that civil engineering schools in the Cagayan Valley Region are cognizant of this need and have developed programs that address it. These programs likely focus on equipping students with both technical skills and a broader understanding of global market trends and demands, enabling them to contribute effectively to the country's competitiveness. While the exact nature of these programs would require further investigation, the results provide initial evidence of their existence and relevance.

Furthermore, the value placed on these institutions by various stakeholders indicates their recognition as important partners in higher education, professional, government, and non-governmental sectors, as well as within the industry. The recognition of civil engineering schools as valuable partners suggests that they have established collaborative relationships and actively engage in knowledge exchange and cooperation with other institutions and organizations. This recognition could be attributed to the schools' successful track record in producing competent graduates, conducting relevant research, and providing valuable services to their stakeholders.

Importantly, the results highlight the significance of civil engineering schools in their local communities. The institutions are acknowledged as providers of extension programs that directly address the needs of the community. Extension programs typically involve initiatives aimed at empowering the community and fostering self-reliance. By offering extension programs responsive to the needs of the community, civil engineering schools in the Cagayan Valley Region are actively contributing to local development and enhancing the well-being of their surrounding communities.

Licensure Examination of CE Schools for the Past Five Years

Regarding the national passing rates, the results indicate that most civil engineering schools surpassed the national passing rates over the five-year period, except for School A in the 2018-2019 examination. This finding suggests that the majority of the CE schools have been successful in preparing their students for the licensure examination, meeting or exceeding national standards. However, School A's lower passing rate in 2018-2019 indicates a potential need for improvement in their curriculum, teaching methods, or student support systems to enhance student performance. According to the literature, the variations in licensure examination performance among the CE schools can be attributed to factors such as educational quality, curriculum design, faculty qualifications, learning environment, and resources. School 2 consistently achieves higher scores, indicating potential strengths in these areas. Additionally, most civil engineering schools have surpassed the national passing rates, emphasizing their overall effectiveness in preparing students for licensure examinations, with the exception of School A in a specific year.

Test of Significant Difference on the Status of CE Schools along the Institutional Sustainability Areas when Grouped According to Type of Institution

The study also presents significant differences in the status of CE schools across various institutional sustainability areas when grouped according to the type of institution. The results indicate that there are significant differences in governance and management, quality of teaching and learning, quality of professional exposure, research and creative works, support to students, relations with the community, and the overall average score. Studies have emphasized the importance of effective governance and management practices in achieving institutional sustainability. Private institutions often have greater autonomy in decision-making processes, allowing them to implement strategic plans and policies more efficiently. Research suggests that private institutions tend to excel in governance and management due to their flexibility and ability to respond swiftly to changing circumstances.

In addition, the quality of teaching and learning is a crucial aspect of institutional sustainability. Private institutions frequently have more resources to invest in faculty development, instructional technologies, and teaching methodologies. This enables them to provide a higher-quality educational experience. Research has shown that private institutions often outperform public institutions in terms of faculty qualifications, student-faculty ratios, and student engagement. Furthermore, private institutions often have stronger connections with industry partners, which can lead to better opportunities for professional exposure for their students. These connections enable private institutions to offer internships, cooperative education programs, and networking events, enhancing students' preparation for their future careers. Public institutions, on the other hand, may face more bureaucratic challenges in establishing and maintaining these partnerships.

Meanwhile, private institutions tend to allocate more resources and provide greater support for research and creative works. They often have dedicated research centers, grants, and incentives for faculty members to engage in research activities. This emphasis on research can result in higher levels of scholarly productivity and innovation in private institutions compared to public institutions. Moreover, private institutions often offer more comprehensive support services to students, including counseling, career guidance, and mentoring programs. These institutions prioritize individual student success and take proactive measures to ensure students' well-being and academic progress. In contrast, public institutions may face budget constraints and limited resources for student support services. Finally, private institutions often foster stronger relationships with the community by actively engaging in outreach programs, community service initiatives, and partnerships with local organizations. This community engagement can enhance the institution's reputation, facilitate collaboration opportunities, and provide students with practical experiences outside the classroom. Public institutions may face challenges in community engagement due to bureaucratic processes and limited resources.

In general, the study indicates that private civil engineering schools have a higher level of assessment across the institutional sustainability areas compared to public schools. This finding aligns with the literature, which suggests that private institutions tend to have certain advantages in terms of governance and management, quality of teaching and learning, professional exposure, research and creative works, support to students, and relations with the community.

Test of Significant Relationship Between Licensure Examination Performance and the Status of CE Schools along the Institutional Sustainability Areas

The results indicate that there is no significant relationship between licensure examination performance and the status of CE schools along the institutional sustainability areas of governance and management, quality of teaching and learning, quality of professional exposure, research and creative works, support to students, relations with the community, and the overall average. Studies on institutional sustainability often emphasize the importance of effective governance and management practices. However, the specific connection between governance and management and licensure examination performance may not be well-established in the literature.

While the quality of teaching and learning is crucial for students' preparedness for licensure examinations, the relationship between this factor and institutional sustainability areas may not directly translate into a significant association. The quality of teaching and learning is influenced by various factors, including faculty qualifications, curriculum design, and instructional methods. However, the impact of these factors on licensure examination performance may be complex and multifaceted, leading to the lack of a significant relationship. Professional exposure, such as internships and industry partnerships, can enhance students' practical skills and knowledge. However, the direct relationship between professional exposure and licensure examination performance may be less straightforward. Licensure examinations often assess theoretical knowledge and problem-solving abilities, which may not be solely

dependent on professional exposure. The lack of a significant relationship suggests that the influence of professional exposure on licensure examination performance may not be prominent in this context.

While research and creative works contribute to the overall academic environment and reputation of an institution, their direct impact on licensure examination performance may be limited. Licensure examinations typically focus on assessing foundational knowledge and skills rather than research abilities. In addition, student support services play a crucial role in academic success and well-being. However, the relationship between support services and licensure examination performance may not be straightforward. Support services primarily aim to facilitate students' overall development and provide resources for their academic journey. While these services can indirectly contribute to licensure examination performance, other factors, such as individual study habits and preparation, may have more direct influences.

Finally, strong relationships with the community can provide opportunities for collaboration, practical experiences, and industry engagement. However, the direct link between relations with the community and licensure examination performance may not be well-established. Licensure examinations primarily assess technical knowledge and skills, which may not be directly influenced by community relations.

In general, the lack of a significant relationship between licensure examination performance and the status of CE schools across various institutional sustainability areas suggests that the data does not provide evidence to support a meaningful connection between these factors. While individual factors, such as governance and management, quality of teaching and learning, quality of professional exposure, research and creative works, support to students, relations with the community, and the overall average.

V. CONCLUSION AND RECOMMENDATIONS

In conclusion, the study reveals that civil engineering schools in the Cagayan Valley Region have demonstrated their commitment to institutional sustainability in various areas. They have established strong relationships with the community, actively engaging in extension activities that address societal needs. Moreover, these institutions have displayed effective governance and management practices, ensuring accountability, strategic vision, and sustainable resource generation. The quality of teaching and learning is prioritized, with continuous improvement efforts and the provision of necessary learning resources. Additionally, they provide opportunities for professional exposure, research, and creative work, promoting innovation and practical skills among students. Support for students from diverse backgrounds is also a key focus, ensuring inclusivity and addressing their non-academic needs. The findings of the study emphasize the importance of considering the institutional context when evaluating the status of civil engineering schools. The significant differences observed among schools when grouped according to the type of institution highlight the influence of institutional characteristics on their performance. These findings call for tailored strategies and support systems to address the unique challenges and opportunities faced by different types of institutions. Overall, the study provides valuable insights into the sustainable practices and challenges within civil engineering schools in the Cagayan Valley Region.

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