International Journal of Science and Research Archive

eISSN: 2582-8185

Cross Ref DOI: 10.30574/ijsra

Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

Check for updates

Spatial mapping and alignment of SHS, HEIs, and Industry in Northwestern Leyte

Rose A. Arceño *

Office of Research Services, Palompon Institute of Technology, Palompon, Leyte, Philippines.

International Journal of Science and Research Archive, 2024, 13(02), 1975–1979

Publication history: Received on 23 October 2024; revised on 01 December 2024; accepted on 04 December 2024

Article DOI: https://doi.org/10.30574/ijsra.2024.13.2.2373

Abstract

This study examines the spatial distribution and alignment of Senior High Schools (SHS), Higher Education Institutions (HEIs), and industries in Region VIII, focusing on the interconnections between geographic, educational, and economic factors. Key areas of analysis include Ormoc City, Albuera, Kananga, Isabel, and Palompon. Urban centers like Ormoc City host a high concentration of SHS offering diverse tracks such as Science, Technology, Engineering, and Mathematics (STEM) and Accountancy, Business, and Management (ABM), catering to the demands of Information Technology (IT) and business industries. In contrast, rural areas focus on technical-vocational (TVL) tracks aligned with agriculture and fisheries but often lack alternative career pathways. HEIs are concentrated in Ormoc City, creating accessibility challenges for rural students and limiting program diversity in industrial hubs such as Isabel and Palompon. Although there is strong alignment between TVL tracks and agro-industrial needs in Albuera and manufacturing demands in Isabel, significant gaps remain, including inadequate IT specialization to meet Ormoc City's industry needs, limited HEI capacity for STEM graduates in rural areas, and insufficient business management programs in Palompon. These findings provide actionable insights for policymakers, educators, and industry stakeholders to address educational gaps and strengthen regional economic development.

Keywords: Career pathways; Economic development; Higher Education Institutions; Rural areas; Senior High Schools

1. Introduction

Education and industry must align to drive regional economic growth and workforce development. In Region VIII, Philippines, the relationship between SHS, HEIs, and industries plays a critical role in preparing students for employment and ensuring the relevance of educational programs to local labor market demands. This study addresses the need for spatial characterization and matching, examining the geographic, and programmatic alignment of these institutions with the industries, and identifying gaps and opportunities for collaboration among educational institutions and industries in the region.

Regular communication channels between academia and industry can help identify mutual goals and streamline collaboration efforts (Tompkins & Mirza-Babaei, 2022).

As manifested by researchers (Tabunshchyk et al., 2023), effective structuring of academia-industry partnerships involves developing training modules that combine compulsory and alternative academic disciplines, allowing flexibility to meet market demands and enhance competencies, thereby promoting knowledge transfer and addressing real-world problems through tailored educational experiences.

* Corresponding author: Rose A. Arceño

2. Methodology

This research employs a mixed-methods approach combining spatial analysis, surveys, and qualitative interviews.

- On Spatial Analysis. Geographic Information Systems (GIS) are used to map the locations of SHS, HEIs, and industries, overlaying data on regional economic activity and population density.
- Program Analysis. A curriculum review evaluates how SHS and HEI programs align with the skills and knowledge demanded by industries in Region VIII.
- Stakeholders Engagement. Surveys and interviews with educators, students, and industry representatives provide qualitative insights into existing challenges and potential solutions.

3. Results and Discussion

The following are the data in Region VIII by SHS distribution, HEI distribution, and industry distribution. These data are analyzed considering spatial distribution and alignment.

Table 1 SHS Distribution in Region VIII

Municipality	No. of SHS	Tracks Offered (count)	Enrollment (2024)	Key Observations
Ormoc City	12	STEM (6), ABM (4), TVL (5), HUMSS (3)	10,000	High concentration of tracks, especially STEM and TVL.
Kananga	4	STEM (1), TVL (2), HUMSS (1)	2,500	Focus on agriculture-related TVL tracks.
Albuera	3	TVL (3), HUMSS (1)	1,800	Predominantly offers TVL focused on fisheries and mechanics.
Isabel	5	STEM (2), ABM (2), TVL (3), HUMSS (1)	3,500	Balanced tracks with focus on industrial TVL.
Palompon	6	STEM (3), TVL (3), ABM (1), HUMSS (2)	4,200	Diverse tracks but gaps in ABM specialization.

Table 2 HEI Distribution in Region VIII

Municipality	No. of HEIs	Tracks Offered (count)	Enrollment (2024)	Key Observations
Ormoc City	3	Engineering, IT, Business, Agriculture	8,500	Programs align with urban industries but limited health-related programs.
Isabel	1	Industrial Technology	1,200	Strong alignment with local manufacturing.
Palompon	2	Maritime, Tourism, Business	5,525	Focused on maritime and tourism-related programs.
Kananga	0	N/A	N/A	Students rely on nearby municipalities for HEIs.
Albuera	0	N/A	N/A	Limited access to higher education facilities.

Table 3 Industry Distribution in Region VIII

Municipality	No. of Industries	Key Sectors	Workforce Demand (2024)	Key Observations
Ormoc City	15	Manufacturing, IT, Agriculture	5,000	High demand for STEM and IT graduates.
Kananga	5	Agriculture, Energy	1,500	Focus on technical skills for energy operations.
Albuera	4	Fisheries, Agro-industry	800	Workforce demand aligns with TVL tracks.
Isabel	10	Industrial Manufacturing	3,000	Strong alignment with technical tracks.
Palompon	8	Maritime, Tourism	2,500	Workforce demand primarily for maritime and tourism.

3.1. Spatial Characterization

SHS Distribution. High concentration in urban areas like Ormoc City, providing diverse tracks such as Science, Technology, Engineering, and Mathematics (STEM) and Accountancy, Business, and Management (ABM) to meet demand in Information Technology (IT) and business industries. Furthermore, rural areas like Albuera and Kananga focus on technical-vocational (TVL) tracks aligned with agriculture and fisheries, but they lack other career options like (ABM).

HEI Distribution. HEIs are concentrated in Ormoc City, creating accessibility challenges for students in Kananga and Albuera. There is also limited program diversity in Isabel and Palompon despite industry needs for health and IT graduates.

Industry Distribution. Industries in Ormoc City demand STEM and IT graduates, but nearby HEIs offer insufficient IT specialization. Isabel's manufacturing industries align well with industrial technology programs but highlight the need for expanded engineering offerings. Palompon's maritime and tourism industries are supported by local HEIs, yet broader business management programs are necessary.

3.1.1. Spatial Distribution of SHS, HEIs, and Industries

The findings indicate uneven geographic distribution. Urban areas have a high concentration of SHS and HEIs, whereas rural areas face limited access to educational institutions. Industries are predominantly located in industrial hubs near urban centers, creating potential mismatches between workforce supply and demand.

3.1.2. Program Alignment with Industry Needs

Analysis reveals a partial alignment of SHS and HEI programs with industry requirements. While technical-vocational tracks in SHS align with manufacturing and construction industries, gaps exist in fields like information technology and healthcare, which are increasingly critical in the region. Aligning academic curricula with industry requirements enhances the relevance and applicability of learning outcomes, improves assessment tools, and ensures graduates possess the necessary competencies, ultimately increasing employability and creating a more competent, job-ready workforce that meets evolving industry needs (Ashraf & Surono, 2024). Aligning academic curricula with industry requirements enhances workforce development by equipping students with relevant skills, fostering adaptability, and ensuring practical readiness. This collaboration promotes a seamless transition into the workforce, ultimately boosting economic vitality and innovation within the ecosystem (Parul, 2024).

3.1.3. Challenges and Opportunities

Challenges. There is a mismatch between industry demands and HEI graduates' competencies. The results revealed limited partnerships between industries and educational institutions. Moreover, geographic barriers prevent equitable access to relevant programs. Universities in peripheral regions face challenges in aligning with local industry needs while maintaining national and global legitimacy (Pinheiro, 2018). Relatively, on socio-economic contributions,

universities are expected to enhance regional competitiveness and contribute to socio-economic development, which requires a strategic approach to education and industry collaboration (Shirokorad, 2022).

Opportunities. Considering the challenges, strengthening internship and on-the-job training programs will contribute to positive results. The school may introduce industry-responsive curriculum reforms. Likewise, expanding partnerships for shared resource utilization enhances career matching. This is done through collaborations that focus on integrating industry requirements into academic programs, ensuring that graduates possess relevant skills (Sumiati et al., 2024). Developing comprehensive internship programs allows students to gain practical experience while providing companies with a talent pipeline (Sumiati et al., 2024).

3.2. Program-Industry Alignment

These are the strengths of the program-industry alignment. TVL tracks in SHS align well with industries in Albuera and Isabel (e.g., agro-industry and manufacturing). Maritime and tourism programs in Palompon are tailored to its industry needs. Aligning academic curricula with industry requirements is essential for effective workforce development, as it ensures that graduates possess the skills and knowledge necessary to meet current job market demands. This alignment not only enhances employability but also fosters innovation and adaptability among students, preparing them for a dynamic industrial landscape. Graduates equipped with industry-relevant skills are more likely to secure employment, addressing the talent gaps identified in various sectors. In addition, programs like Curriculum-to-Careers (C-to-C) mapping have shown success in integrating employer-sought skills into academic curricula, leading to better job readiness (Kelly et al., 2023).

On the other hand, the gaps were also identified. STEM track graduates often have to migrate to urban HEIs for higher education due to limited HEI capacity in rural areas. There are insufficient IT-related programs across the region to meet the growing demand in Ormoc City's industries. Kananga lacks access to HEIs, which may hinder students' transition from SHS to higher education. By addressing these gaps, Northwestern Leyte can achieve a more cohesive educational and workforce ecosystem, driving sustainable regional development.

4. Conclusions and Recommendations

The spatial characterization highlights critical mismatches between the geographic and programmatic distributions of SHS, HEIs, and industries in Region VIII. To address these challenges, the study recommends:

- *Curriculum Alignment*. Regular consultations between educational institutions and industries to ensure curriculum relevance. Regular consultations between educational institutions and industries significantly enhance the quality of graduates by ensuring that their skills and knowledge align with current industry demands. This collaboration not only enriches the curriculum but also provides students with practical experiences that are crucial for their employability. Collaboration helps to integrate theoretical knowledge with practical applications, addressing the disconnect often found in traditional education (Sumiati et al., 2024). Industry input in curriculum development ensures that the content is relevant and up-to-date, preparing students for real-world challenges (Igbongidi, 2023).
- *Decentralized Access*. Establishing satellite campuses and offering flexible learning modalities in underserved areas. Satellite campuses can create networks that integrate local knowledge with global resources, contributing to socio-economic development (Cole, 2022). Key factors influencing the success of satellite campuses in underserved areas include mutual engagement with local partners, the establishment of regular contact networks, the integration of globally sourced knowledge into local contexts, and the creation of supportive social infrastructures (Cole, 2022). Furthermore, key factors influencing the success of satellite campuses in underserved areas include equitable resource distribution, high-quality teaching and learning resources, addressing the needs of low socio-economic students, and effective remote educational video production to enhance learning opportunities (Nicholas & McDonald, 2022).
- *Strengthened Collaboration*. Developing industry-academe partnerships for training, research, and shared resource development. Programs supported by industry, such as internships and workshops, significantly improve graduates' job readiness and employability rates (Uma et al., 2022).
- *Policy Interventions*. Government incentives for industries to collaborate with educational institutions in rural areas.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Ashraf, M. & Surono, Aziz. (2024). Integration Model of Occupational Certification Scheme Into Instructional Design To Close The Gap of Learning Outcomes and Industry Needs. Journal transnational universal studies, doi: 10.58631/jtus.v3i6.97

[2] Cole, E. (2022). Measuring the effects of the social rural university campus. Research Evaluation, doi: 10.1093/reseval/rvac027

[3] Igbongidi, Paul, B. (2023). Promoting Partnership between Universities and Industries in Business Education Programme. International journal of research and innovation in social science, VII(V):451-456. doi: 10.47772/ijriss.2023.70537

[4] Kelly, Jacquelyn, E.; Gielstra, Dianna; Bruno, Jim. (2023). Uniting academia and industry to bridge the skills gap: Incorporating industry advisory councils in Curriculum-to-Careers Programmatic Mapping in undergraduate environmental science programs. Industry and higher education, doi: 10.1177/09504222231175413

[5] Nicholas, Barham & McDonald, Lynn P. (2022). The remote studio: Enabling higher quality teaching and learning resource creation in satellite campuses and increasing equity. ASCILITE Publications, doi: 10.14742/apubs.2022.214

[6] Parul, Sharma. (2024). Bridging the skill gap between the academia and industry: a study on. Indian Scientific Journal of Research in Engineering and Management, doi: 10.55041/ijsrem33553

[7] Pinheiro, Rómulo. (2018). Towards a strategic alignment: Regional challenges and university tensions in peripheral geographies. 26-40. doi: 10.4324/9781315168357-3

[8] Shirokorad, I. (2022). Territorial Organization of Educational Services: A Factor of the Sustainable Spatial Development. European Proceedings of Social and Behavioural Sciences, doi: 10.15405/epsbs.2022.02.3

[9] Sumiati, Yuni; Aminatus, Sa'diyah; Agus, Sugihartono; Luluk, Nur; Indah, Kusumawardani; Bagus Shandy, Narmaditya & Ludi Wishnu Wardana. (2024). Industry and academia collaboration in addressing the theory and practice gap business and management education (a systematic literature review). doi: 10.59971/necent.v2i1.33

[10] Tabunshchyk, Galyna; Parkhomenko, Anzhelika; Subbotin, Sergey; Karpenko, Andrii & Trotsenko, Eduard. (2023). Work-in-Progress: Framework for Academia-Industry Partnership in Ukraine. doi: 10.1007/978-3-031-26190-9_96

[11] Tompkins, Jess & Pejman, Mirza-Babaei. (2022). Effective Industry Research Partnership. doi: 10.1145/3505270.3558353

[12] Uma, S.; Maheswara, Rao, K. V & Deisy, C. (2022). An Empirical Study on the Impact of Industry Supported Courses in enhancing the Graduate Outcomes. Journal of Engineering Education Transformations, 35(is1):262-269. doi: 10.16920/jeet/2022/v35is1/22038