**Addressing the Gap between Academics and IT Industry in Nepal**

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**Abstract**

This study addresses the gap between academics and IT industry of Nepal. The research is based on the survey of B.Sc. CSIT students of Tribhuvan University. The survey found that a majority of students are not satisfied with the quality of IT education provided by colleges under the affiliation of Tribhuvan University. The students cited several reasons for their dissatisfaction, including lack of industry-relevant training, real-world exposure, and career counseling. To ensure the sustainability and competitiveness of the sector, it is necessary to bridge the gap. thus, the recommendations in this research can help industry professionals, professors, educators, and policymakers to bridge the gap and meet the needs of the industry.

**Keywords:** Academics, Collaborations, Dissatisfaction, Gap, Industry, Technologies

**Introduction**

In today's rapidly advancing technological landscape, the Information Technology (IT) industry plays a crucial role in driving economic growth and innovation. In Nepal, as in many other countries, the IT industry has witnessed remarkable growth and has become a significant contributor to the national economy. However, there exists a persistent gap between the academic programs offered by educational institutions and the ever-evolving demands of the IT industry.

The primary objective of this study is to bridge the divide between academia and the IT industry in Nepal, with a specific focus on B.Sc. CSIT students attending colleges affiliated with Tribhuvan University. The research aims to explore the experiences and challenges faced by these students to propose effective solutions and recommendations for narrowing the gap between academics and the IT industry in Nepal. By examining the current state of IT education and its alignment with industry requirements, this study endeavors to shed light on the challenges faced by students and the necessary steps to bridge this gap effectively.

The theoretical foundation of this research lies in the ideology that academic programs should prepare students not only with theoretical knowledge but also with practical skills and industry exposure to ensure their successful transition into the workforce. It emphasizes the importance of cultivating a symbiotic relationship between educational institutions and the IT industry, where the curriculum is aligned with industry needs, enabling students to acquire relevant skills and knowledge.

**Literature Review**

Oguz and Oguz (2019) conducted a study on the gap between academia and the software industry, providing insights into challenges faced by students, recent graduates, and academia. Their findings resonate with the issues identified in our research on addressing the gap between academics and the IT industry in Nepal. The study emphasizes the need for collaboration and highlights the importance of real-world exposure, practical experience, and aligning academic programs with industry requirements. By considering their recommendations, we can propose specific strategies tailored to the Nepalese context, fostering a more competent workforce and minimizing the gap between academics and the IT industry.

Sahin and Celikkan (2020) investigate the gaps between industry and academia in information technology fields and highlight the need for dynamic curricula that align with industry trends. They emphasize the lack of emphasis on non-technical skills and stress the importance of soft skills like analytical thinking and teamwork. The study suggests incorporating hands-on projects, adopting Agile development models, and establishing effective communication channels between students and the industry. These findings are relevant to our research on addressing the gap between academics and the IT industry in Nepal, emphasizing the importance of industry-oriented curricula and developing students' soft skills to bridge the gap effectively.

Nyoupane and Nyaichyai (2022) compared the ICT components of the MLISc. curriculum at Tribhuvan University (TU) in Nepal with universities from SAARC countries. The study found that while the MLISc. curriculum at TU shares similarities with other universities in terms of ICT content, there is a relative lack of emphasis on library management software. To bridge this gap, the Central Department of Library and Information Science at Tribhuvan University implemented a practical course focused on Koha. The research underscores the need for practical-based courses and an updated curriculum to enhance ICT effectiveness in library management. This study supports our research on bridging the gap between academics and the IT industry in Nepal, emphasizing the importance of industry-relevant ICT education.

Aasheim, Li, and Williams (2019) conducted a study comparing the perceptions of faculty in academia and IT managers in the industry regarding the knowledge and skill requirements for entry-level IT workers. The results, based on a survey of 350 IT managers and 78 faculty members, show that while there are some differences at the individual skill level, there is no significant disconnect between faculty and IT managers in terms of the overall importance of technical, organizational, personal, interpersonal skills, and experience/GPA. This literature review provides valuable insights for our research paper on addressing the gap between academics and the IT industry in Nepal, as it highlights the need for aligning IT education with industry expectations.

The study conducted by Sui et al. (2018) investigates the disparity between industry and academic expectations regarding college students' employability. It highlights the industry's greater emphasis on employability, particularly in specific skills, general abilities, and behavior/attitude qualities. The research emphasizes the need to enhance graduates' employability to mitigate unemployment and underemployment. It suggests incorporating employability into university curriculums, providing employment counseling, and offering work experiences aligned with industry requirements. This study underscores the importance of bridging the gap between academia and the industry to address employability concerns for college students, which aligns with our research paper's focus on the gap between academics and the IT industry in Nepal.

The article by Sun and Metros (2011) investigates the digital divide's impact on academic performance. It explores the relationship between technology use, socioeconomic status, and academic outcomes. The authors highlight that students' academic achievements are influenced by various interrelated factors. While technology use is associated with socio-economic status and academic performance, educators should examine the direct effects of technology on achievement and its interaction with other factors. Moreover, socio-economic status can affect future career prospects. The study's findings suggest the importance of understanding these complexities for future research and practice. In our research on the gap between academics and the IT industry in Nepal, this literature review provides insights into the factors influencing academic performance and career opportunities, helping to inform our investigation.

The article by Garousi, Giray, Tuzun, Catal, and Felderer (2020) focuses on bridging the gap between software engineering education and industry needs. It presents a systematic literature review of 33 studies to synthesize the findings and provide insights for educators and hiring managers. The review highlights the misalignment between skills taught in university education and those required in the industry. It suggests the need to revise the emphasis on certain topics and incorporate real-world examples and practical experiences in software engineering education. These recommendations align with our research on the gap between academics and the IT industry in Nepal, emphasizing the importance of aligning educational curricula with industry needs to enhance graduates' employability.

Akdur (2022) examines the software engineering skills gap in the industry, focusing on the mismatch between skills acquired in university and industry expectations. The study surveyed 628 software practitioners in Turkey who work in various countries. It highlights the importance of understanding the most crucial hard and soft skills in the industry for practitioners and academia. The findings underscore the need for industry-academia collaborations to update educational curricula and provide practical experiences to bridge the skills gap. This research resonates with our study on addressing the academics-IT industry gap in Nepal, emphasizing the significance of collaboration for improved employability.

**Research Gap**

The literature reviews reveal several gaps in research regarding the alignment between academics and the IT industry in Nepal. Firstly, there is a need for research that specifically investigates the extent of misalignment between academic programs and industry requirements in the Nepalese context. This research would enable the development of tailored strategies to bridge the gap effectively. Secondly, there is a gap in understanding the emphasis on soft skills in IT education in Nepal and the challenges faced by IT graduates in developing these skills. Lastly, there is a need to identify specific IT domains where the gap between academia and industry is prominent in Nepal and explore strategies to address this gap comprehensively. By addressing these research gaps, this study aims to provide context-specific insights and recommendations, promoting better alignment between IT education and industry demands, and enhancing the employability of IT graduates in Nepal.

**Research Objectives**

* To identify the specific skills and knowledge gaps between the education provided by academic institutions and the requirements of the IT industry.
* To explore the perspectives of IT industry professionals and academic stakeholders on the challenges and barriers contributing to the gap.
* To propose recommendations and strategies, including curriculum updates, industry-academia collaborations, and initiatives to enhance the employability of IT graduates in Nepal.

**Materials and Methods**

The materials and methods section of this study involved a questionnaire survey and field interviews to gather data from B.Sc. CSIT colleges in Nepal. A questionnaire survey was conducted among 16 colleges offering B.Sc. CSIT programs, specifically targeting students in their 1st, 3rd, 5th, and 7th semesters. The surveyed colleges included both government and private institutions. The survey was administered using Google Forms to ensure efficient data collection and ease of response for the participants. Additionally, field interviews were conducted among 17 students representing four government colleges located in the Kathmandu valley, namely Amrit Science Campus, Patan Multiple Campus, Padma Kanya Campus, and Bhaktapur Multiple Campus. These interviews provided qualitative insights and complemented the survey data. By employing both questionnaire surveys and field interviews, this study aimed to obtain a comprehensive understanding of the perceptions and experiences of B.Sc. CSIT students regarding the gap between academics and the IT industry in Nepal.

**Results and Discussion**

The results of the survey conducted through Google Forms are presented in Table 1. The survey received responses from students in 16 different B.Sc. CSIT colleges, including both government and private institutions. The number of participants varied across colleges, with the highest response rate from Amrit Science Campus (25 participants) and the lowest from Mechi Multiple Campus, Butwal Multiple Campus, and Birat Multiple Campus (3 participants each). The participants were categorized based on their semester of study, ranging from the 1st to the 7th semester.

**Table 1: Survey Response Distribution among B.Sc. CSIT Colleges**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **College** | **1st Semester** | **3rd Semester** | **5th Semester** | **7th Semester** | **Total Responses** |
| Amrit Science Campus | 3 | 4 | 5 | 13 | 25 |
| Patan Multiple Campus | 0 | 4 | 3 | 8 | 15 |
| St. Xavier’s College | 0 | 0 | 3 | 5 | 8 |
| Bhaktapur Multiple Campus | 0 | 1 | 1 | 6 | 8 |
| Texas Intl College | 0 | 0 | 1 | 8 | 9 |
| Sagarmatha College of Science and Technology | 0 | 0 | 0 | 3 | 3 |
| Madan Bhandari Memorial College | 0 | 0 | 1 | 3 | 4 |
| Bhairahawa Multiple Campus | 0 | 1 | 0 | 1 | 2 |
| Prime College | 0 | 0 | 0 | 3 | 3 |
| Siddanath Science Campus | 0 | 0 | 3 | 2 | 5 |
| Shreeyantra College | 1 | 1 | 0 | 2 | 4 |
| Padmakanya Campus | 1 | 3 | 3 | 5 | 12 |
| Asian School of Management & Technology | 0 | 0 | 2 | 4 | 6 |
| Mechi Multiple Campus | 1 | 1 | 0 | 5 | 7 |
| Butwal Multiple Campus | 0 | 1 | 0 | 2 | 3 |
| Birat Multiple Campus | 0 | 0 | 0 | 3 | 3 |
| **Total Students** | **6** | **16** | **22** | **73** | **117** |

**Survey questionnaires**

**Question: How would you evaluate the overall quality of the IT course at your college or university?**

This question aimed to assess participants' evaluation of the overall quality of IT courses at their respective colleges or universities. The options provided ranged from "excellent" to "poor," allowing respondents to express their opinions on the course quality. The table below displays the distribution of responses, providing a comprehensive overview of how participants rated the IT courses based on the given options.

**Table 2: Evaluation of Overall Quality of IT Courses**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **College** | **Excellent** | **Good** | **Average** | **Below Average** | **Poor** |
| Amrit Science Campus | 0 | 3 | 10 | 7 | 5 |
| Patan Multiple Campus | 0 | 1 | 4 | 7 | 3 |
| St. Xavier’s College | 1 | 3 | 2 | 2 | 0 |
| Bhaktapur Multiple Campus | 0 | 0 | 3 | 3 | 2 |
| Texas Intl College | 0 | 1 | 4 | 3 | 1 |
| Sagarmatha College of Science and Technology | 0 | 0 | 1 | 2 | 0 |
| Madan Bhandari Memorial College | 0 | 0 | 1 | 2 | 1 |
| Bhairahawa Multiple Campus | 0 | 0 | 0 | 0 | 2 |
| Prime College | 0 | 0 | 1 | 2 | 0 |
| Siddanath Science Campus | 0 | 0 | 0 | 3 | 2 |
| Shreeyantra College | 0 | 0 | 0 | 2 | 2 |
| Padmakanya Campus | 0 | 3 | 3 | 4 | 2 |
| Asian School of Management & Technology | 1 | 1 | 2 | 1 | 1 |
| Mechi Multiple Campus | 0 | 0 | 2 | 4 | 1 |
| Butwal Multiple Campus | 0 | 0 | 1 | 2 | 0 |
| Birat Multiple Campus | 0 | 0 | 0 | 0 | 3 |
| **Total Students** | **2** | **12** | **34** | **44** | **25** |

The analysis of 117 survey responses revealed a concerning trend regarding the evaluation of IT courses. The combined number of participants rating their courses as "below average" and "poor" (69 in total) exceeded the sum of those rating them as "excellent," "good," and "average" (48 in total). This indicates that a majority of the respondents expressed dissatisfaction with their IT course, as they rated it below average or poor. These findings highlight a need for attention and improvement in the overall quality of IT courses, as a significant number of students are not satisfied with their educational experience. Addressing the concerns raised by students and implementing measures to enhance the quality of IT courses is crucial to ensure a more positive learning environment and student satisfaction.

The table below presents the responses to various survey questions in terms of percentages. The questions cover a range of aspects related to IT training, exposure to the industry, curriculum relevance, extracurricular activities, soft skills development, career counseling, networking opportunities, and the perceived gap between academics and the IT industry.

**Table 3: Evaluation of other factors**

|  |  |
| --- | --- |
| **Survey Questions** | **Response** |
| **Yes** | **No** |
| Did you receive any IT training in addition to academics at your college? | 30% | 70% |
| Do you believe your college gives you enough exposure to the IT industry? | 9.41% | 90.59% |
| Do you think your university's curriculum is up-to-date with the latest industry trends and technologies? | 6.84% | 93.16% |
| Does your college provide extracurricular IT-related activities? | 35.04% | 64.96% |
| Do you think your IT program adequately improves your soft skills? | 21.37% | 78.63% |
| Did your college provide you with any career counseling or placement assistance? | 4.27% | 95.73% |
| Do you think your college provides adequate opportunities for networking with IT professionals? | 11.96% | 88.04% |
| Do you think there is a significant gap between academics and the IT industry? | 94.87% | 5.13% |

The survey results indicate several areas of concern regarding the IT courses at the participating colleges and universities. Firstly, a majority of respondents felt that their institutions did not provide sufficient exposure to the IT industry, indicating a potential gap between academic knowledge and practical industry experiences. Furthermore, respondents expressed dissatisfaction with the currency of the curriculum, suggesting a need for regular updates to align with evolving industry trends and technologies. Limited availability of extracurricular IT activities and inadequate focus on developing soft skills were also identified as areas requiring improvement. Additionally, the lack of career counseling and networking opportunities with IT professionals further emphasized the need for enhanced support in preparing students for their future careers. The widespread agreement on a notable gap between academics and the IT industry emphasizes the significance of closing this gap through collaborations between industry and academia, as well as implementing appropriate educational changes.

**Table 4: Learning Methods of Latest Software Trends and Technologies**

|  |  |
| --- | --- |
| **Survey Question** | **Responses** |
| **Self-taught** | **Through an institute** | **Through college** |
| How did you learn the latest software trends and technologies? | 82.05% | 29.9% | 15.38% |

The breakdown of the participants is shown in the diagram below



**Fig: Breakdown of different learning methods**

Based on the data, it is evident that a significant majority of respondents (82.05%) have learned the latest software trends and technologies through self-teaching. This indicates a strong inclination towards self-directed learning and independent exploration in acquiring knowledge in this field. Additionally, 29.9% of respondents have obtained their knowledge through an institute, highlighting the importance of formal education and training programs. On the other hand, a relatively smaller percentage (15.38%) have relied solely on their college education to learn about the latest software trends and technologies. This suggests that colleges may need to enhance their curriculum or provide additional resources to keep up with the rapidly evolving IT industry. Furthermore, the breakdown of students who have learned from multiple options suggests a combination of self-learning, institute-based training, and college education can be beneficial in acquiring comprehensive knowledge and skills in software trends and technologies.

**Conclusion and Recommendation**

In conclusion, this research study sheds light on the gap between academics and the IT industry in Nepal, emphasizing the need for concerted efforts to bridge this divide. The findings highlight the dissatisfaction of students with the quality of IT courses, underscoring the importance of updating the curriculum to align with industry trends and providing more practical training opportunities. Furthermore, the study emphasizes the significance of industry exposure, hackathons, and coding contests to enhance students' practical skills and promote industry engagement. To foster a more industry-relevant education, the research recommends promoting industry research collaborations, providing mentorship programs, and encouraging participation in real-world projects. By implementing these recommendations, academic institutions can better equip IT graduates with the necessary skills and knowledge demanded by the industry, thus enhancing their employability and closing the gap between academia and the IT sector in Nepal. Educational stakeholders, policymakers, and industry professionals must collaborate and support these initiatives to ensure a more robust and responsive IT education system in the country.

**References**

Aasheim, C. L., Li, L., & Williams, S. (2019). Knowledge and Skill Requirements for Entry-Level Information Technology Workers: A Comparison of Industry and Academia. Journal of Information Systems Education, 20(3).

Akdur, D. (2022). Analysis of Software Engineering Skills Gap in the Industry. ACM Transactions on Computing Education, 23(1), 1–28. https://doi.org/10.1145/3567837

Garousi, V., Giray, G., Tuzun, E., Catal, C., & Felderer, M. (2020). Closing the Gap Between Software Engineering Education and Industrial Needs. IEEE Software, 37(2), 68–77. https://doi.org/10.1109/ms.2018.2880823

Guneri Sahin, Y., & Celikkan, U. (2020). Information Technology Asymmetry and Gaps Between Higher Education Institutions and Industry. Journal of Information Technology Education: Research, 19, 339–365. https://doi.org/10.28945/4553

Nyoupane, B., & Nyaichyai, L. (2022). Comparing ICT components in MLISc. curriculum of TU with SAARC Universities. *Access: An International Journal of Nepal Library Association*, *1*(1), 83–97. https://doi.org/10.3126/access.v1i1.46617

Oguz, D., & Oguz, K. (2019). Perspectives on the Gap Between the Software Industry and the Software Engineering Education. IEEE Access, 7, 117527–117543. https://doi.org/10.1109/access.2019.2936660

Sui, F. M., Chang, J. C., Hsiao, H. C., Chen, S. C., & Chen, D. C. (2018). A Study Regarding the Gap Between the Industry and Academia Expectations for College Student's Employability. In 2018 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM) (pp. 1573-1577). Bangkok, Thailand: IEEE. doi:10.1109/IEEM.2018.8607269.

Sun, J. C. Y., & Metros, S. E. (2011). The Digital Divide and Its Impact on Academic Performance. US-China Education Review A, 2, 153-161.