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## University Industry Linkages

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# **University Industry Linkages**

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### **1. Introduction**

University Industry Linkages (UIL) empowers the embedding of relevant real world problem learning into curriculum resulting in students that are better prepared to enter the workforce and to meet demands of Industries seeking work ready graduates. Industry's role in University Industry Linkages is also critical and, therefore, engagement with industry partners is essential to determine what is required to support their engagement and contribution to University Industry Linkages [1]. "Equipping graduates with capabilities that not only meet the expectations of employers, but also facilitate a smooth and effective transition for these people into the workforce"[2]. Stakeholders, organizations, associations which have to recognize that building collaboration between employers and universities is crucial in growing and enhancing University Industry Linkages in our country and ensuring a productive and globally competitive economy . Collaboration research within university and industry is still far from international practice because university conducted basic research and industry expected applied research in Myanmar. To improve national economy, university needs to enhance research and innovation by linking with industry. This paper expresses a case study on Technological University Thanlyin– Thilawa SEZ Linkage. The outcomes observe the development teaching learning systems, curriculum development, benefits from University Industry Linkages, challenges for university to engage industry. Paper confirms University students who undertake University Industry Linkages as part of their degree consistently achieve better employment outcomes. The university doesn't have incentive policies for collaborating with industry Science, Technology & Society 24:1 (2019): 73–100 University Industry Linkages In Promoting technology transfer v 95 emphasized more on the collaboration in supporting the training activities of the university. The higher-weighted drivers for U–I linkages include the enhancement of facilities and equipment of the university, improving the reputation and images of the university to the government and community, the provision of opportunity for acquiring practical experiences and opportunities for students to approach the practical jobs through internships an basic research conducted by the university and the applied research expected by the arms basic research conducted by the university and the applied research expected by the arm.

### **2. Universities in Myanmar**

Yangon University was established since 1920 in Myanmar. In 2019, there are 174 universities in higher education. All of the universities are state funded with a funding for higher education. The Ministry of Education controls 134 universities and the remaining 40 universities fall under control of the other ministries. All universities are run by their corresponding ministries include Health, Defense, Culture, Environmental Conservation and Forestry, Agriculture and Irrigation, Livestock Breeding and Fisheries, Co-operatives, Union Civil Service Board, Religious Affairs, Border Affairs, and Transport. Different disciplines are split between different universities, such as Medical, Technological, Computing, Agricultural, Educational, and Economic fields.

Myanmar has developed 24 development zones, and the Ministry of Education ensures that each of development zones has at least one Liberal Arts and Science University, one

Technological University, and one Computer Science University. And most of universities are located nearby industrial zones. The most compelling reason for universities to locate near technology-based firms or industrial zone is to facilitate tacit knowledge transfer from faculty who are on the leading edge of scientific breakthroughs to industry and to engage easily each other.

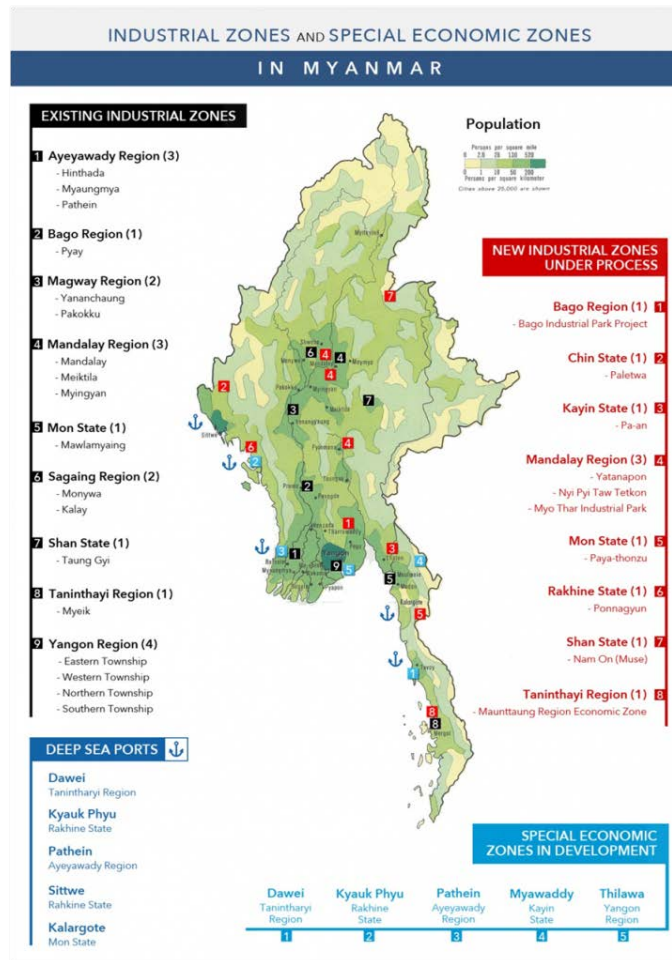
MOE has successfully completed a 3.5 year Comprehensive Education Sector Review (CESR) to develop an evidence-based National Education Strategic Plan (NESP) for 2016-2021. NESP Goal of Myanmar is to be improved teaching and learning, vocational education and training, research and innovation leading to measurable improvements in student achievement in all schools and educational institutions. Among them, Research and Innovation leading to measurable improvements in student achievement is the responsibility of higher education sector.

The NESP provides a 'roadmap' for sector-wide reforms that will dramatically improve access to quality education for students at all levels of the national education system. The NESP will equip Myanmar students, youth and adult learners with the knowledge and skills they need to succeed in the 21st century. The education system will ensure that all citizens: achieve minimum national learning standards, learn how to think critically and creatively, gain leadership skills that enable them to help others in their communities and understand, respect and fulfill the rights and responsibilities of all citizens. [3]. University Industry Linkages can support universities and colleges to deliver more learning and teaching which is relevant to society and the regional economy. It can also make the potential of higher education institutions to become drivers of innovation and economic and social growth for nation.

### **3. Industries in Myanmar**

A total of 19 industrial zones exist across Myanmar with an additional 6 zones either planned or currently under construction. The Yangon East Industrial Zone and Yangon North Industrial Zone are significantly larger than other zones in the country. Consequently, they are divided into 14 industrial areas that function as independent industrial zones each with a Management Committee. This results in a total of 39 industrial areas in Myanmar which are either operational or planned. Figure (1) below provides the industrial zones and special economic zones in Myanmar.

Geographic distribution of industrial zones across the country is concentrated around two urban poles; Yangon and Mandalay. Most of the small industrial firms operating in non-polar zones can barely be called "industrial". They tend to be family-owned businesses with roughly 10-15 employees. Some of them, particularly those in agro processing, are closely linked to the agricultural cycle and may only operate for a few months out of the year. As such, Small and Medium Enterprise (SME) support, especially in non-polar zones, should be a key component of Myanmar's plan for industrialization.



Fig(1) Industrial zones and Special Economic Zones in Myanmar

Source: <https://www.mmbiztoday.com> (Myanmar Business Today)

Most of the industries are agricultural processing, textiles, footwear, wood and wood products, copper, tin, tungsten, iron, construction materials, petroleum and natural gas, pharmaceuticals, and fertilizers, foods, garments, cement. Automobile and television sets are also assembled in the country. Figure (2) shows strength, weakness, opportunities and threats of Myanmar industrial zones. Since Myanmar is still developing country, our industry has a lot of weakness and challenges to develop. Anyway, industry also needs to seek cooperation with universities, because of University Industry Linkages, industry may get following benefits from universities;

- ❖ access to manpower, including well-trained graduates and knowledgeable faculty;
- ❖ access to basic and applied research results from which new products will evolve;
- ❖ solutions to specific problems or professional expertise, not usually found in an individual firm;
- ❖ access to university facilities, not available in the company;
- ❖ assistance in continuing education and training;
- ❖ obtaining prestige or enhancing the company's image;
- ❖ being good local citizens or fostering good community relations.

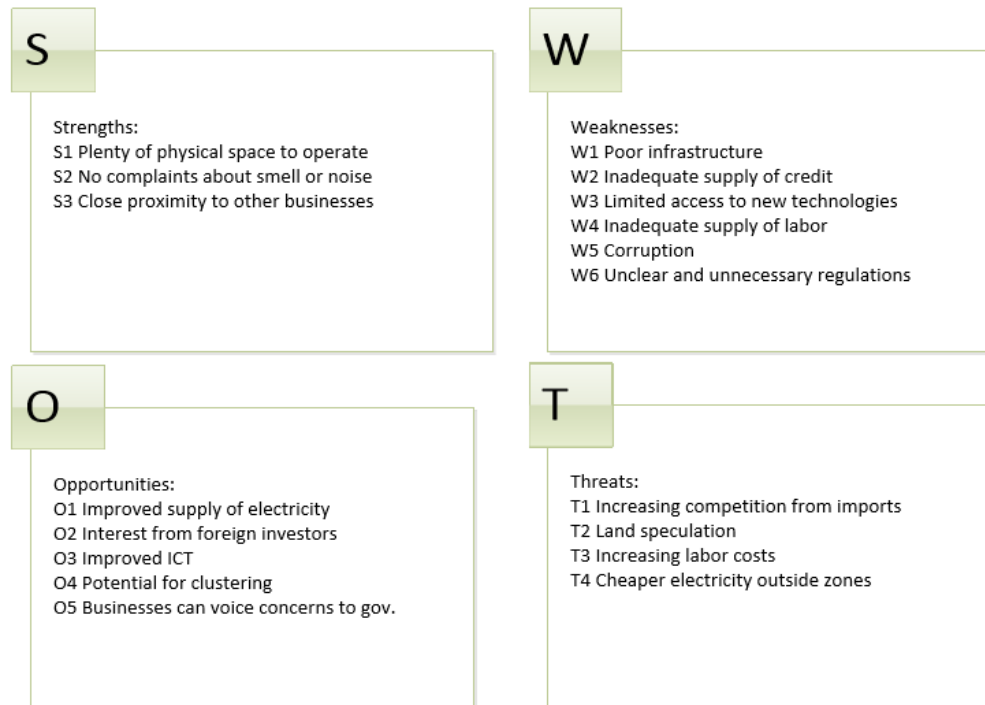


Fig (2) SWOT Analysis of Operating Environment in Industrial Zones

Source: Diagnostic Review and Policy Recommendations

(By Bart Robertson and Maureen Seng Taung , 2015)

In 2015, the Management Committee of nearly every industrial zone in Myanmar stated that: *According to Management Committee members, this is primarily due to the lack of collaboration between universities and the industrial zones. Most of the graduates from the universities have only studied theoretical concepts, while pragmatic skills training has been lacking. College graduates do not have the skills they need to effectively carry out their new jobs. They demand the pay of skilled labor with degrees but do not have the skills the degree should imply. On the job retraining is often necessary. Semi-skilled labor is also hard to find as there are few technical training institutes in the country.* According to above statement, developing University Industry Linkages must be a priority in Myanmar.

#### 4. University Industrial Linkages

The fourth industrial revolution is set to bring radical changes to the workplace including the loss of jobs through automation and Artificial Intelligence (AI), however industry may still need universities to provide the right kind of people. Linkages between Universities and Industry are increasingly a critical component of efficient national innovation systems. Developing countries face even greater barriers to such alliances, calling for a differentiated approach to promoting university industry linkages. Collaboration between universities and industries is critical for skills development (education, training and research), the generation, acquisition, and adoption of knowledge (innovation and technology transfer), and the promotion of entrepreneurship.

Generally, University Industry Linkages can be classified into three types. (1) Short-term collaborations generally consist of on-demand problem solving with predefined results and

tend to be articulated through contract research, consulting, and licensing. (2) Long-term collaborations are associated with joint projects and public-private partnerships (including joint university-industry research centers, and research consortia), (3) Longer term collaborations are more strategic and open-ended, providing a multifaceted platform where firms can develop a stronger innovative capacity in the long run, building upon the capabilities, methods, and tools of universities [5].

So far, universities in Myanmar can linkage with industry for scholarship program, internship program, job opportunities, on job training, conducting technical seminars, curriculum review, to know local market needs, to learn real world program, funding, exposure for not only students but also teachers from universities. There are a few number of universities can conduct joint research with firms in Myanmar.

### 5. Case Study on Technological University (Thanlyin) –Industries Linkages



Fig (3) Technological University (Thanlyin)

Technological University (Thanlyin) was established as the Industrial Training Center (1), founded in 1986. In November 1995, it became a Government Technological Institute (GTI), offering two-year diplomas on vocational studies. In October 1999, the school was "upgraded" to a Government Technological College (GTC), offering four-year Bachelor of Technology (BTech) programs, and again in January 2007 to the Technological University level, offering bachelor's degree programs in Engineering and Architecture and master's degree programs in Engineering. The university's 125 hectare (310-acre) campus is outside Thanlyin, and actually closer to a small town of Kyauktan Township. In 2018, 2000 students graduated with Bachelor of Engineering (BE) or Bachelor of Architecture (BArch) degrees.

Technological University (Thanlyin) offers 8 Engineering Programs and Architecture for not only Bachelor Degree but also Master Degree for staff. Since 2013-14 Academic Year, Ministry let Technological Universities to reduce student intake numbers in order to focus quality orientation in Engineering Education. Government increased the education budget to fill necessary laboratory equipment and infrastructure up grading. For quality orientation, Technological University (Thanlyin) has been certified ISO 9001:2008 in 2015 by BV. And, Technological University (Thanlyin) tried to become an associated member of AUN-QA in 2017. In 2017-2019 Myanmar Engineering Council awarded provisional stage Accreditation certificates to Technological University (Thanlyin). ISO 9001:2015 has been upgraded in 2019.

In particular, Technological Universities have focused on Outcome Based Education in 2015. All of academic groups have decided to redesign curriculum to face 21<sup>st</sup> century education.



Internship program which takes for eight weeks continuously, integrated project, mini thesis become compulsory for every engineering students before their graduation. Students are sent to industry when they are 2<sup>nd</sup> year engineering students in order to familiar with industrial knowledge. After 3<sup>rd</sup> year and 4<sup>th</sup> year examination, students must do integrated project by using theoretical background and industrial knowledge. In 5<sup>th</sup> year, students need to do industrial attachment or in house training. It provides the impetus for the students to comprehend and appreciate real-life working experiences. Students may realize their ambition and ascertain their career path from the experience gained during industrial training. Final year students must also take internship program. The objectives of the internship program are as follows:

- To provide an opportunity for students to discover, learn about, and familiarize with industry of their discipline, and with organizations within the industry. Students will acquire interpersonal skills through meeting with professionals in their field of study.
- To provide an opportunity for students to observe real-life practices and implementation of theoretical lessons and principles. Students will acquire practical skills and experience working on projects and alongside industry experts.
- Overall, students will get experience as following:
  - Organizational skills and professional awareness.
  - Ability to work under supervision and directions.
  - Efficiently completing tasks, fostering good relationship.
  - Communication skills and contribution to other people.[ 6]

This program is also compulsory for all final year engineering students. The internship program is normally scheduled for December-January or May-June and should have a minimum of eight weeks for all final year students. Although, most students from Technological University (Thanlyin) are easy to get internship program because it is saturated near Thilawa SEZ. There are still many difficulties for other students from other Technological Universities. Federation of Myanmar Engineering Societies, Union of Myanmar Federation of Chambers of Commerce and Industry, Association of Myanmar Architects are mainly supporting students to reach proper internship program.



Fig (4): Thilawa Special Economic Zone

Thilawa Special Economic Zone is the first Special Economic Zone (SEZ) built in Myanmar, and it commercially was operated in September 2015. The Thilawa Special Economic Zone located at South-East of Yangon, which is the biggest commercial city of Myanmar. And, it is at around 20 km 4 km away from Yangon and 4 km away from Technological University (Thanlyin). Inside Thilawa SEZ, both hard and soft infrastructure such as roads and utilities to supporting services and maintenance are developed up to the international standard.



It becomes the first international standard SEZ of Myanmar and is developed by a Myanmar-Japan joint venture company with the name of Myanmar Japan Thilawa Development Limited, where the Myanmar government, Japanese government, Myanmar private consortium and Japanese private consortium have stakes [7].

There are many different reasons to choose Thilawa, all of which make it a superior investment choice. The SEZ has already confirmed investments from 82 firms including those from Japan, Singapore, China, and Europe. Most firms are from Japan. Many foreign investors are interested in Thilawa SEZ because it offers many economic benefits for investors. As Myanmar's SEZ right on the outskirts of Yangon, this Zone has been set up to provide its investors with a streamlined and easy investment and operation process, while also providing the advantages of four universities, Co-operative University (Thanlyin), East Yangon University, Myanmar Maritime University and Technological University (Thanlyin). More than 30,000 university students are studying in Thanlyin region.

In Academic Year 2018-2019, Technological University (Thanlyin) engaged 22 Companies and Organizations. JFE MERANTI, ZTE and WILMAR International Co., Ltd significantly held Campus Recruitment Seminars for final year students and graduates. Most of meeting intended for scholarship and internship program. For example, Association for Overseas Technical Cooperation and Sustainable Partnership (AOTS) supports Technological University (Thanlyin) selecting 50 students who are interested in Programmable Logic Controllers (PLC) each batch. Then AOTS gives In-Depth Training on PLC program which consisted of real-world problems from industry. Students visit industries within training days to adjust coursework and training programs matching the needs of the industry. AOTS gives Japanese Business Culture Lectures for those students who interested to work in Japan Industry. At the end of the training, Technological University (Thanlyin) invites industry from Thilawa SEZ for students' job opportunities. About 10% of students can grasp good job after graduating. Another example is that the Society of Petroleum Engineers (SPE) gives the series of lectures on soft skills, leadership management, personal development program, Communication skills for Petroleum Engineers Students to ready to work in the upstream oil and gas industry. JICA, MAJA, KOICA and AJMMC support university by giving training, scholarship programs, oversea and local job opportunities.

Technological University (Thanlyin) tries to ensure coursework and training program satisfy the expectations of the industry, and ensure the programs are relevant and up to date. Next step, Technological University (Thanlyin) needs to go to commercialization activities through joint research and to find income through joint research and projects with industry.

## **6. Swot Analysis on Case Study**

Technological University (Thanlyin) has not only strengths and opportunities but also a lot of weakness and threats within University Industry Linkages. Figure (3) shows SWOT Analysis of University Industry Linkages in Technological University (Thanlyin).

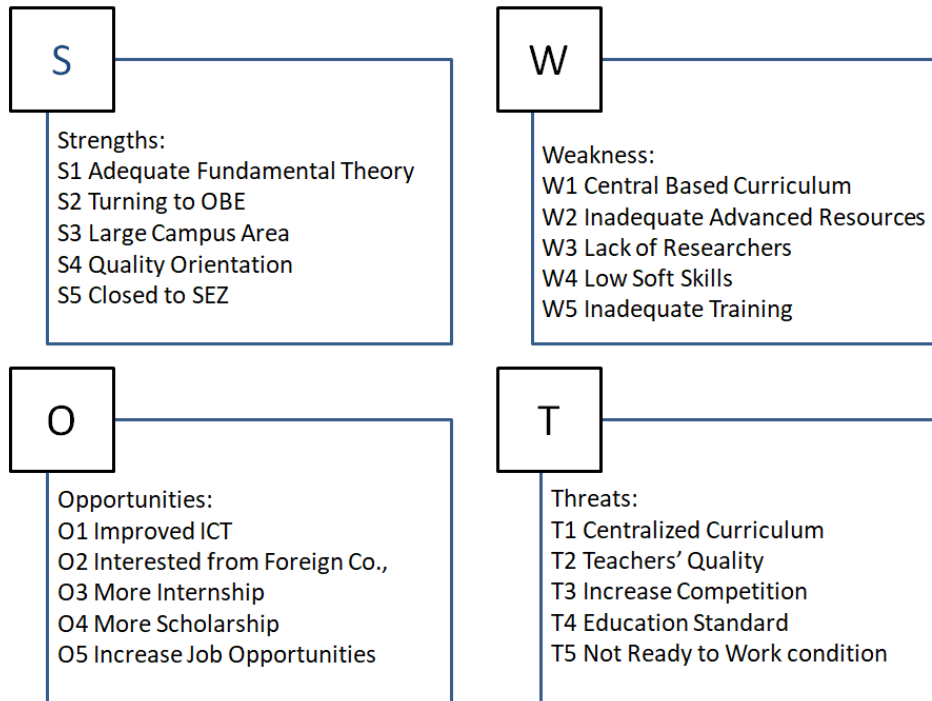


Fig (5) SWOT Analysis of University Industry Linkages in TU (Thanlyin)

## 7. Conclusion

In this paper, universities could engage with industries in between academics' research and projects, internship program, industrial visit, on job training, scholarship program, training program and etc. It's still faint condition in commercialization activities between universities and industries in Myanmar. Current industry involvement has not reached to collaborative research, contract research and consulting from universities, yet. The relationship between faculties and industry engagement are still needed to tie stronger. In technology-oriented disciplines, faculty quality is positively related to industry engagement.

Some barriers are observed that faculty does not have sufficient time for collaborating with industry because of heavy teaching and administrative workload. And also, university doesn't have incentive policies for collaborating with industry. There is clear evidence that students who undertake Industrial Attachment or Internship Program as a part of their degree consistently achieve better employment outcomes. The National Education Policy Committee needs to plan which focus particularly on enhancement partnerships between universities and industry to intend curriculum and enhance employability outcomes for students, ultimately improving national economic productivity and sustainability. In order to measure the current situation of University Industry Linkages in Myanmar, author will collect data regarding with University Industry Linkages from universities as future work.

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