

INDUSTRY LINKS FOR HIGHER EDUCATION IN VIETNAM: DISCUSSION FOR SOLUTIONS

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ARTICLE INFO		ABSTRACT
Received:	25/02/2022	In recent years, industry link is considered as one of important criteria to evaluate training programs of higher education institutions. Meanwhile, industry/companies need to cooperate with higher education institutions and engage in their training programs to translate their practical requirements into such training programs, to ensure that the trained graduates could meet their practical requirements. Therefore, industry link or university-industry cooperation is a must for both universities and industry/companies due to mutual benefits for both sides. This paper aims to discuss important issues and possible solutions to develop industry links in higher education. Secondary research method was employed to synthesize relevant issues of industry links, expert research method was employed to analyse the experience of enhancing industry links of universities in the world and Vietnam. Several solutions are proposed including: Diversifying lecture/researcher as tenure position in universities, diversifying master/doctoral training toward professional work, legally allowing universities to form the joint venture companies, policies to force companies for salaried student internship. The solutions would help promote industry links and thus improve the effective development of Vietnam's higher education.
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LIÊN KẾT DOANH NGHIỆP VÀ TRƯỜNG ĐẠI HỌC TẠI VIỆT NAM: THẢO LUẬN VÀ GIẢI PHÁP

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THÔNG TIN BÀI BÁO		TÓM TẮT
Ngày nhận bài:	25/02/2022	Liên kết doanh nghiệp là tiêu chí quan trọng đánh giá chất lượng chương trình đào tạo của trường đại học. Trong khi đó, doanh nghiệp cần hợp tác với trường đại học để đưa yêu cầu thực tế vào chương trình đào tạo, đảm bảo người học tốt nghiệp có thể đáp ứng tốt các yêu cầu đó. Vì vậy, hợp tác trường đại học – doanh nghiệp là một điều cần thiết mang lại lợi ích cho cả hai bên. Nghiên cứu nhằm thảo luận một số vấn đề liên quan và đề xuất giải pháp phát triển liên kết doanh nghiệp tại các trường đại học tại Việt Nam. Phương pháp nghiên cứu thứ cấp được sử dụng để tổng hợp các vấn đề về liên kết doanh nghiệp, phương pháp chuyên gia được sử dụng để phân tích kinh nghiệm đẩy mạnh liên kết doanh nghiệp của một số trường đại học trên thế giới và tại Việt Nam. Nghiên cứu đề xuất các giải pháp như đa dạng nguồn lực giảng viên, triển khai mô hình đào tạo thạc sĩ/tiến sĩ theo hướng đào tạo nghề nghiệp, tạo hành lang pháp lý để trường đại học liên doanh với doanh nghiệp, xây dựng chính sách yêu cầu doanh nghiệp triển khai các chương trình thực tập hưởng lương. Các giải pháp được triển khai sẽ đẩy mạnh liên kết doanh nghiệp, từ đó nâng cao hiệu quả của giáo dục đại học tại Việt Nam.
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1. Introduction

Until 2020, Vietnam has 224 universities and 236 colleges in which there are 5 foreign direct investment universities [1]. Higher education institutions are expected to provide training programs which could meet social needs [2]. Pham (2017) explained that training to meet social needs is interpreted in two aspects [3]. In the first aspect, training must align with the development of science and the needs for individual learning of learners. In the second aspect, the trained human resources must satisfy the professional job's requirements that the graduates have to undertake after their graduation [3]. However, majority of graduates do not meet practical requirements from enterprises and the number of jobless students after graduation. As surveyed of 500 enterprises in Ho Chi Minh City, 94% of new students after graduation must be re-trained by enterprises after recruitment which increases social cost [4]. Besides, an investigation by World Bank indicated that the quality of higher education in Vietnam still did not satisfy the needs of labour market [5]. Moreover, Nguyen (2018) examined and indicated that Vietnamese graduates' skills are below the professional requirements of enterprises, especially social and behavioral skills [6]. These imply that there is an asymmetry between the capability of higher education institutions in providing qualified human resources and practical employers' requirements and expectations [7].

One of critical reasons for this problem is the lack of industry links in higher education institution. Industry link in higher education institutions refers to the interaction and cooperation between higher education institutions and enterprises/companies to bring mutual benefits for both side [8]. Specifically, industry link or university-industry cooperation in general indicates the process of sharing/transferring the knowledge/technology between university and enterprises so that both sides can benefit from this process, exploring advantages of each side to generate their synergy. In Vietnam, industry links or university-industry cooperation activities have recently been carried out and developed [9], [10]. However, little is discussed about comprehensive understanding about industry links, from either academic or practical aspects. This paper is designed to discuss several issues of industry links for higher education in university such as benefits from university-industry cooperation, and propose solutions to boost up these cooperation in sustainable manner.

2. Research methods

Secondary research method was employed to review and synthesize relevant issues of industry link, which have been argued in the extant literature. Moreover, expert research method was employed to describe and analyse the case studies and experiences of enhancing industry links of universities in the world and Vietnam. These research methods have been frequently used and accepted in the literature [6], [8].

3. Industry links in academia

There are four research strands relating to industry links or university-industry cooperation including (1) Absorption Capacity, Knowledge and Competitiveness in University–Industry Relations, (2) Impact of Knowledge Spill-overs on University–Industry Relations, (3) Strategic Alliances for Industry Innovation, and (4) University–Industry Cooperation [11].

Specifically, the pertinent literature emphasizes knowledge transfer, production of new knowledge and technology between universities and industry through collaborative research, research contracts, or scientific consultancy [12], [13]. Academic research of university-industry cooperation can be categorized into four main topics: (1) Innovation research & development (R&D); (2) Strategic alliances and technology transfer; (3) Knowledge transfer and intellectual property; (4) Entrepreneurial universities and the triple helix [12].

The university-industry cooperation has made positive impacts on both sides. The literature indicated two main impacts of univ-industry cooperation such as (1) basic and applied researches become closer; (2) some interested fields of industry shall be encouraged such as engineering,

business management, new technology as recently while social science and humanities seems to be less developed [14]. Therefore, it makes the imbalances within the universities and as result; some faculties were expanded while another seems to be downsized. In general, the cooperation between university community and industry or companies focuses on the knowledge transfer, technology –engineering, product development which are strongly concerned by the companies. Thank to this cooperation, both sides can have several key benefits in which, the companies can be more competitive as they may be advanced in new technology development and university can learn practical knowledge which is useful for both professors and student trainings. The key benefits of university-industry cooperation can be illustrated by Table 1.

Table 1. *Benefits of motivations for university-industry-government cooperation*

Benefits	University	Industry	Government
Financial	New financial sources: salary, research and programmes; Obtaining public grant.	Reducing costs; Obtaining public grants; Financial benefits; Sharing risks.	Easier to justify budgets for big science centers as 'hidden' benefits are obtained.
Technological	Access to the firm's equipment and materials; Access to firm's employment, scientific and technological experience.	Access to the university's resources; Upgrading of competencies; Spin-offs from contact work; Technological advances/ radical innovations; R&D collaboration projects.	Exploitation of technological spill-over
Strategic	Scientific breakthroughs and progress; Access to managerial experience.	Generating a database of potential employees (university students); Creating strategic alliances; More flexibility; Maintaining/Improving competitive advantage.	Possibility for the emergence of new technology-based industries; Strengthening of the regional innovation system; Increasing economic development.
Educational	More practical training: industrial scientists teach at the university; Contribution to knowledge diffusion; Teachers and pupils have access to new subjects with influence in the firm.	Access to the new knowledge and skills in the university laboratories.	Enhancement of the national educational system.
Political	Enhancement of reputation/ institutional prestige; Responsiveness to government initiatives.	Enhancement of reputation; Increase in the level of national competitiveness; Responsiveness to government initiatives.	Integrated science, technology, and industrial policy.
Epistemological	Testing existing theories; Formulating new hypotheses; Increasing science's predictive power; Generating new paradigms; Citations/PhD theses/publications.	Access to innovative scientists; Reduced uncertainty about technological trajectories; Solving scientific problems.	Upgrading the skills base; Improving national self-esteem and consciousness; Updating the science base.

(Source: [15])

4. University-industry cooperation in practices

By nature, a company is profit maximizing organization and thus, they are always looking for profits either in short/medium or long term. In order to do so, through the univ-industry cooperation, they need to focus on: (1) employing talent students and training specialized and practical knowledge for newly recruited employees, as well as re-training; (2) invest in new technology-engineering to keep their company/product competitive. Therefore, the below are typical university-industry cooperation in practices.

4.1. Exchange of lecturers/experts for professional training

This cooperation is popular in business/management and engineering field in which both sides can set up training center to provide practical and executive training to newly recruited staff of companies. In these training, both lecturers of universities and experts from companies will work together to build shared curriculum and carry out practical training in short time. They may cooperate to re-design the new courses to train executive/senior staff for new changes in the market/business requirement. This form of cooperation is simple and easy to develop and terminate in short time, if necessary. Both sides do not have to invest in long term and can utilize their current facilities. Lecturers and experts can learn each other and thus benefits to both. Participation of professional experts can be from the very beginning of training design work such as program and curriculum design, lecturing and training as well as student guidance in internship.

4.2. Cooperation in research and development (Patent/Licenses)

In order to develop new product development (NPD), companies may need to set up large R&D department with permanent experienced staff which could be more suitable for large companies because NPD contains considerable risk and consume a lot of investment capital and operating cost. The better way is to cooperate with the university and they can share research facilities and staff. Figure 1 presents the general process for their technology/engineering development of NDP in which both sides can participate and synergy their efforts/resources.

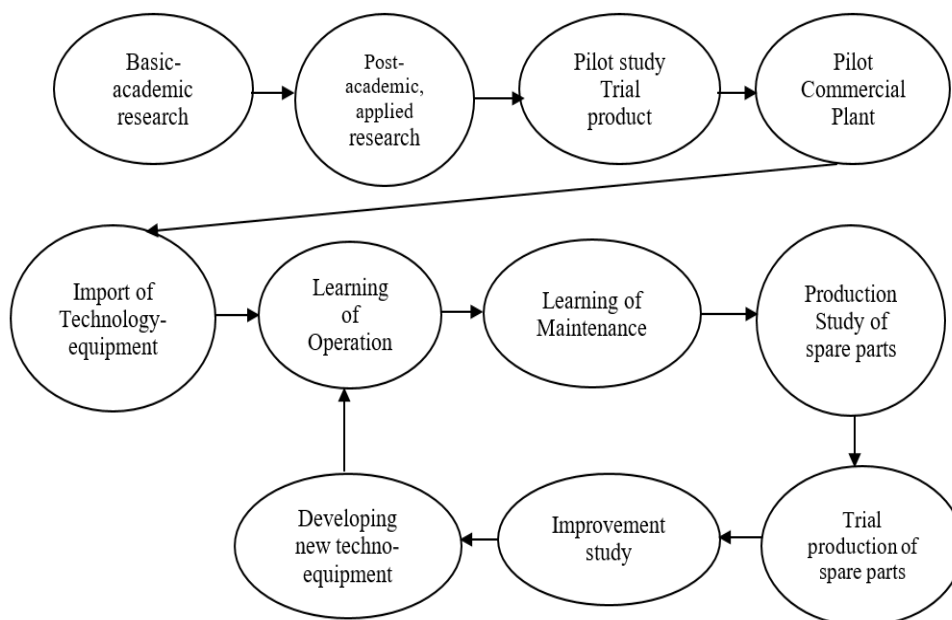


Figure 1. General process of technology/engineering development

(Source: Authors' practical experience)

4.3. Innovation and start-up

This is the latest form of cooperation in which both sides set up the joint venture company which may be in the form of special purpose company (SPC) and key staff of research and innovation process can be shareholders. This company normally does NPD and would sell partial or whole company at the specific time in near future by which the NDP is deemed to be successful. Lecturers as researchers and staff in this company could gain many benefits and thus they are self-motivated for the success of NPD and joint-venture company.

One of special characteristic of this company form is the high level of staff's education. Almost of staff must be high qualified technicians, PhD students and candidates and their supervisors which normally came from both university and industry. During the process of applied research, pilot study and trial production, PhD students can be learned under supervision of both experts from industry and university professors to pursue applied research which may not be allowed to be published and the university agrees to grant PhD degree under this special research process. By accepting this form of PhD training, university can attract the considerable number of high qualified staff as PhD students for joint-venture SPC.

5. Recent trends in university's higher education

Several decades recently has been watched the movement of higher education toward the more requirements of practical teaching from students and employers. The birth of business school and less-academic, but more professional training form shows this trend. Most of students prefer practical training which are closer to practice requirements of business communities so that they could have better chance in job seeking and higher income. Many master programs are designed toward problem-oriented study instead of theory-oriented one as before. Business schools have started to employ consultant experts and businessman to work with traditional professors to be involved in training process from curriculum/syllabus design, lecturing, capstone/thesis guiding and evaluation, etc. It is recommended that top five trends in higher education could be including (1) Supporting student and staff wellbeing is critical; (2) Flexible learning and working options are here to stay; (3) Student career pathways are top of mind; (4) Universities explore new business models; (5) Learner and institution success require innovation [16]. We could see that majority of students in higher education pays much attention on practical program that is closer to practical work which could secure them higher job opportunities and higher income.

Therefore, the university-industry cooperation should be strongly encouraged and entrepreneurial university model could be good example to follow. In such view, the industry link is critical way to forward and different cooperation models can be established based on actual requirements and conditions of both sides. The model of Innovation start-up with participation from university, lecturers, students and company/company's experts, and other potential investors seem to be interesting topics to be followed.

6. Case Studies

Interviews were conducted with experts to describe some case studies and analyse the experiences of promoting industry links in universities in Vietnam and in France. The case studies presented in this section provide deep insights for the university-industry cooperation and should be good illustration for practical cooperation between universities and industry.

6.1. Case study 1: Industry links as cooperative training program

Due to the booming economic development in tourism, a number of universities and colleges that train tourism human resources have had a sharp increase in enrollments, which leads to (1) Dramatic increase in the demand for lecturers; (2) Dramatic increase in the need for training facilities.

Meanwhile, tourism companies are also facing a great need for human resources, in terms of either quantity or quality to meet their practical requirements. Therefore, the cooperation between the higher education institution and the tourism industry has taken place in the form of a quite successful training cooperation, including the following steps: (1) Industry experts at the tourism companies are invited to participate in program development and especially training contents; (2) Experts are invited to teach and train in subjects with high practical requirements; (3) Cooperating in guiding students in their internship. Through this form of cooperation, the two sides of the higher education institutions and the companies have well complemented each other to meet the needs of the market.

Through interviews conducted with university and company representatives and students, the success factors for such cooperation may include: (1) Booming market/demand; (2) Choosing the right business partner with great demand; (3) Company leaders focus on quality and have a passion for education and training; (4) University leaders are flexible in training regulations/processes; (5) Faculty are motivated to learn from experts.

However, this form of cooperation still tends to be unsustainable in the long-term due to a number of key factors such as: (1) Short- and medium-term responsiveness of the market; (2) The two sides tend to quickly learn from each, and thus the motivations for cooperation are easily reduced; (3) Universities and companies can easily withdraw from the training cooperation contract because it is still a form of short-term cooperation with less binding contracts.

6.2. Case study 2: Industry links as joint venture to establish a business applied research and training

A joint venture between a leading university in France with a specialized laboratory on gas treatment technology, and two business partners, one is a company specializing in the design and construction of petroleum works, and the other is an investor in the petroleum industry. This joint venture performs the following tasks: (1) Deploying basic research related to gas treatment to post-academic research, applied Research, and experimental research, (2) Carrying out patent registration procedures for research capable of turning into commercialization, (3) Carrying out research to commercialize copyrights such as pilot study, pilot production which requires equipment and part manufacturing, (3) Marketing and selling new technology equipment and products to global investors in petroleum industry and gas processing. This joint venture requires the following main groups of human resources:

(1) Academic professors in charge of applied research projects and engineers who are masters or doctoral students at universities: The university approves the form of training Doctoral researchers to conduct research application (may be non-published, or published late), Professional doctors or Doctor of engineering as the official training programs of the University. This allows a force of doctoral students or Phd candidate to be the core human resource for the joint venture.

(2) The leading technology and technical experts at the enterprise: The ones can participate in applied research and deploy to trial production.

7. Conclusion and recommendations for Vietnam's universities

This section summarizes important outcomes drawn from the previous sections. It could be orientation of researching, developing and applying research results.

Vietnam as less developed country with low income should be innovative in designing suitable policies which allow universities to be more proactive in form up and implement strategy toward industry links for better higher education in general. Key solutions are recommended as in below sections.

7.1. Diversifying lecturers/researchers as tenure positions in university

So far, Vietnamese universities only recruit permanent lecturers with the main duty of teaching work while requirement researching work is considered as subordinate function. It must

be legally allowed the university to recruit tenure lecturers with the main duty of researching, especially post-academic research including applied, pilot and trial production toward the patent/license in specific fields which require considerable professional knowledge and experimental work. By this newly developed policy, relating tenure recruitment must be innovated to encourage professional lecturer/professors to be involved teaching and researching work in the frame of univ-industry cooperation [8].

7.2. Diversifying of master/doctoral training toward professional work

In the professional fields such as business administration, technology-engineering development, the new form of training of professional master/PhD should be accepted legally to attract high educated students to follow this track. By accepting this form of training, the market will be supplied new kind of high educated labour to boost up R&D in companies and economic development in general [17].

7.3. Legally allowing universities to form joint venture with companies

So far, Vietnam do not prohibit universities to establish companies, however, it is still unclear and thus does not encourage leaders in university to conduct the practice. Basically, public universities in Vietnam can establish joint stock companies. However, the laws relating to this issue should be improved to provide better guidance so that public universities can easily establish joint ventures with other entities to enhance industry links [8], [12]. This could positively encourage and facilitate universities in Vietnam to enhance their industry links and thus improve quality of their training programs.

7.4. Policies to force companies for salaried student internship

Internship requirements for students in Vietnam become very simple and not realistic due to lack of supportive regulations from the government. By forcing companies to recruit students and pay them legally as in several developed countries, companies must seriously select, train them and thus, students will have better chance to expose themselves to companies and having their job [18]. In addition, universities shall have to be active in training their students to be better fit with demand from business community.

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