



Vietnam

How do Vietnamese universities change towards applied science and practice orientation?

An analysis with best practices

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Abstract

Most Vietnamese universities still concentrate on theoretical knowledge and offer study programmes based on training courses with little or no practice orientation or application focus. As a result, a high number of university graduates is unemployed or in unqualified employment. To close the gap between the requirements of the labour market and the current training programmes, many universities in Vietnam are keen to introduce more practice orientation and applied science. They want to learn from international partners and seek collaboration for support in changing their curricula, their teaching and learning methods as well as their learning environment in order to promote practice orientation.

Collaboration with industrial partners is considered as a key factor for more effectively qualifying students for the labour market and potential employers. It enables them to engage as members of the university governance bodies and become involved in teaching programmes, e.g. as invited lecturers, advisors on curriculum contents and development, supervisors or by offering on-site-training at their own companies.

German Universities of Applied Sciences (UAS) can play a crucial role in this context by offering support in the form of curriculum development, co-teaching, university management counselling or joint research in certain fields. In return, they have the prospect of recruiting highly motivated and talented students and setting up cooperation programmes with Vietnamese partner universities so that they can play a significant role in higher education in the future – clearly a window of opportunity for a mutually beneficial cooperation.

1. Introduction

German Universities of Applied Sciences are highly acclaimed worldwide, and especially in Vietnam. 44% of all Vietnamese students in Germany study at a UAS and thus account for a much higher share than that of all international (31 %) and national students (35 %) studying at German UAS (school year 2018/19).

Until now, many German UAS have had a regional focus and have thus contributed greatly to the education of highly qualified professionals for the German market and especially for the numerous companies in their respective regions. However, now German UAS increasingly want and need to internationalise their activities, given the growing internationalisation of even small and medium sized enterprises. They need employees who are internationally trained and possess the necessary language skills and intercultural competences of the respective country. With its programme “UAS. International”, the DAAD wants to support the internationalisation of German UAS and thus enable them to strengthen their own institutional structures and foster international cooperation.

The rapidly changing higher education system and willingness on the part of universities to open up to international collaboration makes Vietnam a suitable partner country for German UAS. A strong need and trend among Vietnamese universities to introduce and enhance applied and practice oriented education and research can be noted.

But what form should practice orientation at Vietnamese universities take? What is to be understood by “universities orienting towards application”, one of the three university categories in Vietnam? How can applied science and cooperation with private and public enterprises

function in Vietnam? What are the potentials and challenges for German UAS when collaborating with Vietnamese partners? These are some of the important questions we attempt to answer in this paper. We hope that it will contribute towards achieving a better understanding of the situation of applied science and practice orientation at Vietnamese universities in order to foster the cooperation between universities in Vietnam and Germany, especially with German UAS.

2. Why is practice-orientation an issue for Vietnamese higher education institutions?

a. General overview of the latest development in higher education (HE) in Vietnam

Since the end of the “American War” and the reunification in 1975, Vietnam has established a HE system in the whole country based on the Soviet model, i.e. one in which specialist universities (University of Agriculture, University of Law etc.) primarily educate students at undergraduate level. Research was conducted mostly in special academies, the largest being the Vietnam Academy of Science & Technology (VAST). Universities were and, for the most part, still are under the control of the Ministry of Education & Training (MoET) or other ministries. In 1975, there were about 56,000 students studying at universities in the north compared to 150,000 students in the south.

Following the economic reforms which were initiated in 1985, the Vietnamese government started rebuilding the higher education system in the nineties. Initial measures involving the establishment of multi-disciplinary universities (two national and three regional universities) or the introduction of Master programmes led the way towards a HE system that differed from the Soviet model. These five multi-disciplinary universities, as well as some other universities like the Hanoi University of Science & Technology (HUST) or the Can Tho-University in the Mekong Delta, offer not only a wider range of subjects and study programmes including Ph.D. programmes, but are also assigned to conduct research, mostly applied research.

The most prominent development to enhance the quality of Vietnamese higher education institutions (HEI) in recent years was the decision of the Vietnamese government to grant universities greater autonomy. This took the form of the Higher Education Act of 2012 and its amendment in 2018. Governors of autonomous universities are entitled to make their own decisions on study programmes, human resources, governance structures or financial issues. However, the government’s decision to cease paying a lump sum to universities at the beginning of 2020 will pose a real challenge for many universities which financially already depend to a large degree on tuition fees.

On the other hand, it will become easier for autonomous universities to cooperate with international partners because it will no longer be necessary to seek the approval of the MoET or other ministries to introduce new or modified study programmes. This bureaucratic procedure used to take a long time and was often an obstacle for international cooperation.

Public-private partnership mechanisms will also become easier since the legal framework ensuring greater autonomy empowers universities to foster such collaborations.

23 of the 235 universities (170 public, 60 private and 5 foreign-investment) in Vietnam are currently taking part in a pilot project that gives them the opportunity to experience autonomy. Some of them (e.g. Danang University of Economics, Hanoi University, HUST, Ton Duc Thang-

University in Ho Chi Minh City (HCMC) or HCMC University of Economics) have used this autonomy as an occasion to sharpen their profiles, enhance their study programmes and invest more in research. If HE rankings can be used as a reliable barometer of the quality of universities, autonomy has clearly proved worthwhile for universities like HUST and Ton Duc Thang. Both have appeared for the first time ever in the top 1,000 of various international rankings, such as the Times Higher Education or the Shanghai Ranking, alongside the two Vietnam National Universities in Hanoi (VNU) and Ho Chi Minh City (VNUHCM) which are reckoned to be the two best universities in the country.

The measures to modernise the HE system in Vietnam involve the introduction of a new accreditation and quality assurance mechanism and the creation of national qualification frameworks, with top priority also given to internationalising the HE system. The HE landscape in Vietnam is to become more diversified, and universities are to be increasingly forced to focus (practice oriented) on education or research. Many universities in Vietnam want to sharpen their profiles to include application and practice and thereby adapt their training programmes more efficiently to the needs of the labour market.

- b. The gap between the needs and the actual situation of human resources for the socio-economic development in Vietnam

The rapid socio-economic development in Vietnam requires human resources with a high level of expertise in technology and the skills to adapt to new technological developments, changing business environments and international and cross-cultural experience. University graduates require education that is not only theoretical but also practical. Until now, only a few universities offer study programmes able to meet the needs of a modern labour market and offer graduates the chance of finding a job which suits their education. On the other hand, too many universities offer study programmes that are overly concentrated on theoretical knowledge and have little or no practice orientation or application focus in their training courses, or offer insufficient English language courses. As a result, a large number of university graduates are unemployed or in unqualified employment, and in some areas this has given university education a bad reputation in general, especially outside of Hanoi and Ho Chi Minh City. The number of university students is decreasing slightly (7% since 2014) as a result of the bad employability of many graduates. Students choose vocational education programmes instead or even decide to work or study abroad. On the other hand, there is a shortage of highly qualified staff in many companies and organisations.

Typical example of a theory-based training programme

The 4-year Bachelor-in-Law programme of HCMC University of Law, which is considered to be one of the two best law universities in Vietnam, includes 131 credits in a four-year bachelor programme. The legal courses that all students are required to study are based solely on legal documents and legal cases in papers. Students are only required to work at a law office, law firm, court or other legal organisation at the graduate thesis stage (7 credits) in order to fulfil and complete their studies. Feedback from employers on the quality of graduates on these programmes shows graduates to have good basic and theoretical knowledge about the legal system but are unable to perform actual tasks, no matter how simple. Examples are drafting a legal document based on the clients' demands, or preparing a cover document for certain legal cases. The same applies to many other disciplines, e.g. economics and management majors in Vietnam.

In general, theory-based training programmes have one thing in common: credits obtained in practice-oriented courses are less than 10% of the total credits. The text-based educational

method dominates at the expense of knowledge-based educational methods. Industrial partners are not involved in the curriculum design, there are no instructional activities or onsite activities (at companies) for students.

The internationalisation context, the launch of the Trans-Pacific Partnership and the ASEAN Economic Community represent enormous changes and challenges for Vietnam universities. The need to enhance the quality of training and research activities of universities is becoming increasingly critical. Awareness of the importance of practice orientation on the part of universities' internal stakeholders (university governors, administrative and academic managers, faculty and students) is extremely high: a brief survey conducted in the context of this analysis has shown that 100% of responses consider practice-orientation to be important or extremely important.

3. Practice orientation at Vietnamese universities

a. The status quo

Many different stakeholders have been included in these discussions: policy makers (the Communist party, ministries), business/industry and employers, university leaders, faculty and students. The overall objective of these discussions was and is to increase the employability of university graduates and develop human capital to meet the demands of industry and society.

As is the case with German UAS, practice-oriented training programmes in Vietnam should ideally focus not only on theoretical knowledge but also and especially on professional skills and applied research programmes. The training programmes should change from a teacher-centred to a student-centred learning philosophy. They should also include a considerable involvement on the part of industrial partners (or other employers) through curricula and extra-curricula activities. The course contents should be delivered by the university faculty as well as by industrial partners, based on active and experiential learning methods (such as project-based learning, case studies, simulations, etc.).

In the various fields, the STEM universities (for example HUST, Danang University of Technology, VNUHCM–University of Technology, VNUHCM–University of Science) have been making faster progress. The changes to their programmes from theory to more practice cover a diverse area, e.g.

- Increasing the ratio of practical credits/total programme credits (from less than 10% to 15% - 50%);
- Adding new and more practical courses (practical experiences, internships, field trips, extension work, site visits, final thesis);
- Increasing the ratio of practice credits/hours versus total credits/hours of courses;
- Raising the commitment of industrial partners in the programmes (programme learning design, curriculum design, instructional activities, student learning evaluations, etc.); 10%-20% teaching hours per course should include the involvement of industrial partners sharing their real experiences;
- Changing the teaching and learning methods from passive to active and experiential (problem-based learning, case study, project-based learning, etc.);
- Restoring the learning environment, etc.

However, the types and processes of the change in practice orientation at Vietnamese universities still differ greatly at both institutional and programme level.

Best practice: practice-oriented training programme

The Information Technology (IT) programme at VNUHCM–University of Science is one of the first revamped programmes accredited by ASEAN University Network-Quality Assurance (AUN-QA) in 2009. The change in the curriculum towards practice orientation is shown clearly in the proportion of courses with practical elements as well as the learning and teaching activities involving industry experts in the programme. By adding an IT introductory course to the curriculum in 2010, the relevance of all workforce requirements was explained to freshman students by professors and experts in the IT field. The structure of the 137 credit IT programme includes two clusters: general knowledge (57 credits) and practical professional knowledge (80 credits). The professional knowledge cluster includes core knowledge (32 credits), specialisation knowledge (38 credits) and graduate thesis (10 credits). Each of the core courses and specialisation courses includes a theory and a practice session. One credit of a practical session equals 30 hours, while one theory credit equals 15 hours. The proportion of practical credits versus total credits accounts for about 25-30%. The orientation of the programme towards practice involves applying project-based learning methods for the whole programme. Students study real (albeit simplified) cases from industrial partners. The cases become more and more difficult and complex through the systematic development of the courses to enhance the professional skills of students. All in all, the percentage of exercises and projects stemming from real projects, including practice session, accounts for about 70-80% of the total content of the courses. Other active and experiential learning methods are applied in the programme to encourage students to learn independently and actively. Students effectively engage in the learning process by solving problems, answering questions, discussing, presenting, working as a team, participating in applied research activities and working in project groups. The development of professional competencies is fostered by practical courses such as a graduate thesis (supervisor can be a visiting instructor from an IT company together with an IT faculty), capstone projects, entrepreneurship courses, internship and practical trainings, etc. In general, the approach enhances the depth of understanding of course material, the acquisition of critical thinking and creative problem-solving skills. Communication skills, collaborative skills or the development of lifelong learning attitudes complement the professional competencies. In addition, students also develop practical skills by participating in company training programmes, IT competition events, site visits, career talks, career days (organised every semester by the Centre of Student Support, IT Faculty) to broaden professional competencies for their future work.

b. Orientation of Vietnamese universities towards application and practice

Until now, Vietnamese universities have not been classified with regard to applied sciences. According to Decree 73/2015/ND-CP of the Vietnamese government of 8th September 2015 on “Standards for Stratification, Framework and Standards for Ranking Higher Educational Institutions“, the classification of higher educational institutions according to educational goals and orientation is based on standards (role in the higher education system, training scope, disciplines, training level, structure of training and technologies). Higher educational institutions are divided into 3 levels:

- higher educational institutions orienting towards research,
- higher educational institutions orienting towards application and
- higher educational institutions orienting towards practice.

German Universities for Applied Sciences (UAS) can be compared with the universities orienting towards application and, in certain fields, also with the universities orienting towards practice. However, many differences still exist between the German and the Vietnamese university types.

Some of the key differences between universities orienting towards application and those orienting towards practice according to Decree 73/2015 are listed below:

Characteristics	University orienting towards application	University orienting towards practice
Provide HR & Scope	Application oriented education and research	Practice oriented education with a focus on competencies
Training level	University level: mainly undergraduate and postgraduate applied science programmes, no or only a few PhD programmes. Bachelor, Master and Doctor degrees	University level: mainly practice-oriented undergraduate programmes. Bachelor degree
Disciplines	Focus on the requirements of the whole of Vietnam with respect to its socio-economic development and international integration. No restriction of disciplines.	Focus on the demands of the region or province; undergraduate programmes designed in connection with vocational educational programmes, focusing on the development of practice skills of learners, associating training with actual production.
Ratio of spending on research and technology vs total spending	At least 20%	10%
Ratio of full-time lecturers participating in scientific research vs total no. of lecturers/researchers	70%	30%
Scientific and technological research	International, national, and regional applied scientific research projects. Development of fundamental research findings of other research institutions into applied technological solutions.	Focus on provincial and national needs Implementation of applied research findings into daily life.
Ratio of full-time lecturers or researchers holding doctor degree vs total full-time lecturers or researchers	At least 15%	Not required

The involvement of experts in training programmes with professional experience from industry and organisations	Not mentioned	At least in 10% of all training programmes at the university
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In general, universities orienting towards application have a strong academic background with degree programmes on all levels and a focus on applied research. They offer different undergraduate programmes concentrating on academic research (Bachelor of Science Degree), on application-oriented education and also training in practical skills. In contrast, universities orienting towards practice are more closely linked to vocational education programmes with a focus on the requirements of regional labour markets.

Best practice: University with application orientation

Hanoi University (HANU) is a good example of a higher education institution striving to become a university with an application orientation. HANU belongs to the small group of fully autonomous universities and thus enjoys a special status in Vietnam. However, the steps towards applied study programmes as well as the two objectives of practice- and research-orientation serve as good examples for other universities.

HANU is focussing on subjects in Foreign Languages, Tourism, Finance and ICT. The President of HANU, Assoc. Prof. Nguyen Van Trao, wants to change the curricula and align it with the vision and mission of HANU to become a “University towards Application”. Every two years HANU collects data from a survey among industrial partners to learn about the requirements of the labour market and the employers. These data are the basis for the regular adaptation of the curricula.

One of the results is that study programmes are to focus more on skills and offer training opportunities as part of the curriculum as well as extra-curricula activities. New technologies are to be integrated into the programmes and be given a much stronger focus on interdisciplinarity. Graduates are to be made “ready for work” after leaving university instead of the employer having to train them for a long period of time. To achieve this goal, HANU wants to cooperate closely with partners from industry and thus gain support in the curriculum development, have students trained in the companies or complement the study programmes through practical case studies and exercises offered by professional experts.

The faculty of HANU needs to adapt its training methods towards greater competency and practice orientation. To achieve this, HANU wants to learn from international partners and introduce modern teaching methods. Co-teaching models with industrial partners are to help HANU teachers gain practical knowledge. Young teachers in particular are especially willing to follow such examples. But resistance can also be encountered among some teachers unwilling to change their teaching methods. Evaluations by students about the quality of teaching contribute towards enhancing the study programmes and could exert pressure to bring about a change in the teaching methods.

Besides the high degree of practice orientation in the study programmes, applied research is the second pillar of HANU which is to be developed in the coming years. However, priority lies on developing the study programmes according to the needs of the rapidly changing labour market in Vietnam.

Industrial partners and students appreciate the development of HANU towards an application oriented university based on partnerships, as evidenced by the high number of study applications. While the number of students in Vietnam in general is in slight decline, the number of students at HANU is increasing. The good employability of HANU graduates is clearly an important success factor that is attracting potential students.

c. Involvement and support of international partners

The development towards more practice orientation among Vietnamese universities has been taking place actively in different ways, with many international organisations becoming involved and offering support through various projects. The changes concern:

- Realignment of curricula with industry demands, raising the practical focus in the process. A number of changes are: curricula designed on the basis of outcome-based and competency-based education, supported by data on labour market demands and employer contributions through feedback investigations (survey or interview). Introduction of integrated curricula (including knowledge, skills and attitude, integration of personal, interpersonal and professional skills into the fundamental and specific knowledge, etc.).
- Enhancement of faculty competencies for realignment with new programmes by offering training on different topics such as syllabus design, expected learning outcomes design, alignment of active and experiential teaching and learning methods and expected learning outcomes at programme and course level, student learning assessment methods and activities aligning with expected learning outcomes and teaching-learning strategies, integration of skills training, blended and project-based learning, use of information and communication technology in teaching, etc.
- Reform of university structures by adding supportive student centres, teaching and learning centres or centres for educational excellence, business collaboration centres, etc. Business collaboration centres are to connect with industrial partners in order to organise professional trainings, workshops and seminars (extra-curricula activities) together with student affairs offices to support students in developing their career skills. Teaching and learning centres (for example the Centre for Educational Excellence at VNUHCM–University of Science), support programmes in faculty development, instructional design, etc. in order to contribute to the practice-oriented adaptation of programmes.

Best practice: international support

One example of many other reform projects supported by international partners is the “Profession-Oriented Higher Education” (POHE) project to achieve responsive, profession-oriented higher education in Vietnam. It was funded by the Dutch government and hosted by the MoET as well as Dutch partners in two phases (2005–2009, 2009–2015). Eight Vietnamese universities (Hanoi University of Agriculture & Forestry, Hue University of Agriculture & Forestry, Hung Yen University of Technology & Education, National Economics University, HCMC University of Agriculture and Forestry, Thai Nguyen University of Agriculture and Forest, Thai Nguyen University of Pedagogy, and Vinh University) participated as pilots for a national system of POHE certification which corresponds with the national human resources policies and standards for higher education teachers of the MoET. In five POHE teacher training centres (TTC), more than 1,000 teachers have been trained and/or have participated in the development of 40 new POHE curricula, besides updating the existing 10 POHE curricula in various sectors including agriculture, training, technology, management and business. The results were shared with other Vietnamese universities in order to expand the scope of its activities outside the current eight universities.

So far, only a few universities have effectively redesigned their curricula of undergraduate programmes in different majors (mechanics engineering, information technology, electronics and telecommunications, environment, economics, business administration, tourism and hotel management, law, teacher training, etc.). But most of the curricula still need to be redesigned to change the theory-based teaching and learning methods to more practice-oriented methods.

4. Cooperation between universities and the private/public sector

a. Do public/private support programmes, studies, policy regulation exist?

At country level, the Vietnamese government has supported the academia-industry collaboration through several policies, legal documents and programmes, including the Law on Higher Education 2012 amended in 2018, Decree No. 86/2018/ND-CP on Foreign Cooperation and Investment in Education and Decree No. 63/2018/ND-CP on Investment in the Form of Public-Private Partnership.

At university level, Vietnamese universities themselves have been actively promoting the collaboration by setting up an official unit in their governance structure, such as an office (External Relation Office at VNUHCM–International University), centres (e.g. Centre for Alumni & Business Cooperation at Ton Duc Thang University, Centre for Business Collaboration at University of Economics and Finance, Centre for Student Support and Business Relation at HCMC University of Forest and Agriculture, Centre for Business Relation at HUTECH University etc.), or in some cases both (VNUHCM–University of Science). However, most centres have been focusing on using the links to their industrial partners in order to communicate job information and scholarship opportunities to graduates rather than support the involvement and commitment of industrial partners to the programme development. The main means by which industrial partners are being incorporated into programme development is taking place by faculties and programme leaders at faculty level. Moreover, university and faculty internal policies exist on the participation of industrial partners as official members of university committees.

Besides the changes to a university governance structure, the long-term and short-term university plans also contain a section on public/private sector collaboration promotion. A good example is the strategic plan 2016-2020 towards 2030 of VNUHCM–University of Science which states that the enhancement of public/private sector collaboration is required for all applied science programmes including targets such as clarity on key partners, the number of partners that faculties need to involve into programme development, the activities requiring contribution from industrial partners as well as the development of a financial plan and associated budget.

b. Structural cooperation between universities and the private/public sector

There are different options and programmes for collaborating between universities and the private/public sector in training, research and outreach, focussing especially on participation in the university governance structure, training programmes and research projects:

(1) *Membership of a university governance structure*

Partners from the private/public sector can be members of official university councils, advisory boards or committees at institutional or faculty level (e.g. Nha

Trang University). They can also serve as members of science and training committees (e.g. the automotive technology programme of the transportation technology faculty at VNUHCM–University of Technology) that contribute towards setting up the strategic plan and annual action plan of a university or a faculty.

(2) *Involvement in study programmes*

- Design, development and revision of curricula:
Partners from the private/public sector have become involved in designing, developing and revising curricula as key stakeholders in order to later benefit from such training programmes when recruiting and employing graduates. By conducting surveys, interviews and discussions, universities learn from employers about the gap between the competencies required of graduates and those actually existing, about job requirements, knowledge and skills that programmes require to prepare students. Some universities conduct the surveys and interviews every year or every second year, depending on their own regulations. However, although many curricula have been reviewed they have not been changed, or were reviewed without the involvement of partners from the private/public sector.
- Teaching and learning:
Partners from the private/public sector are also involved in the study programmes in different roles: as speaker, visiting lecturer, trainer, advisor, supervisor, mentor, evaluator, supporter, or by conducting in- and out-course activities:

In-course activities: Partners from the private/public sector join the programme from an early stage as speakers, sharing their experience of a subject or topic related to the course content. They can act as co-lecturers or as lecturers whose task is to teach part of the course while incorporating their own practical knowledge. They can support the programmes as co-instructors or mentors for student projects, co-advisors for theses or be invited to join the final oral defence of a graduate thesis. Partners from the private/public sector in some cases provide the case studies and project topics and become co-evaluators to assess the results of the projects conducted by students.

Out-course activities: The involvement often takes the form of a site-visit, internship trainings, extension works or career trainings, mostly at companies.

The practical internship training of students acts as a bridge between academic learning and professional practice. In these training concepts, industrial partners work together with faculties. Some programmes set internship training as a 3-5 credit compulsory course (e.g. Finance and Business programmes at VNUHCM–International University, Aqua-Technology at Nha Trang University) or as a requirement for graduation, while other programmes define an internship only as a selective course (e.g. Biotechnology Program at VNUHCM–University of Science). The internship lasts for two to three months and is usually conducted during the last two years of the programme. Together with an advisor or lecturer of the faculty, the supervisor at the internship organisation supports the students and evaluates their performance at the end of the internship period.

- Career trainings:
Partners from the private/public sector host trainings at their companies to provide specific technical knowledge and professional skills for students. The university

partners work together with the coordinator of the training programmes to support the students. The partners from the private/public sector award the certificates.

- **Final thesis:**
The final thesis often accounts for 10-12 credits of the total programme credits. Partners from the private/public sector serve as hosts for the thesis. The thesis topics are related to the real demands of the company, and students work at the company while compiling the thesis. Partners from the private/public sector can also act as co-advisors and assessors for the final result of the thesis.

(3) *Research projects*

At the research and technology field, partners from the private/public sector and universities conduct bilateral research projects. The partner from the private/public sector can support the university as a sponsor by providing funding, research facilities or devices, co-laboratories, or by being a licensor/a licensee. Besides these activities, partners from the private/public sector also invest into infrastructure (equipment, applications, learning conditions, learning spaces), e.g. Microsoft, Amazon Web Services, e-Silicon, etc.

In general, the collaboration between partners from the private/public sector and universities can take the form of systemic institutional alignment and improvement, curricula and instructional transformation, academic and social support, professional development or shared resources. The partners from the private/public sector and universities work together to find solutions to enable educational challenges to be jointly identified and resources combined to ensure their implementation.

Best practice: collaboration with the private/public sector

Another good practical example of strengthening the collaboration of a university with industrial partners is the CDIO project of VNUHCM (5 member universities, 29 faculties, 63 majors in engineering, technology and science). “The framework provides students with an education stressing engineering fundamentals set in the context of Conceiving — Designing — Implementing — Operating (CDIO) real-world systems and products.” (<http://www.cdio.org/about>). Programmes have been redesigned in accordance with 12 CDIO standards, including to a high degree industrial partners into the curriculum development and improvement in order to step up the focus on learning outcomes, integrated curricula, new learning/work spaces, active learning or learning assessment. An introduction course (2-3 credits) in all CDIO programmes with a strong focus on career competencies is introduced to students by invited speakers from the industry. Experiential learning methods with a student-centred-learning philosophy is a core element in training to enhance the integrated learning experiences. Many small as well as large projects are conducted with the involvement of industrial partners throughout the programmes, serving as invited speakers, co-lecturers, advisors, mentors, evaluators or sponsors. Some courses have been taking place at the industrial partners’ locations through site visits, career training programmes or internships. Graduates from CDIO programmes are better qualified for the needs of a modern labour market and the requirements of industrial employers. In September 2019, the QS Graduate Employability Rankings 2020 ranked Vietnam National University – Ho Chi Minh City as the best Vietnamese university in the employability category among the top 301-500 universities worldwide.

5. Cooperation partners and conditions for German UAS

- a. Potential partners for German UAS among Vietnamese universities and in the private/public sector

Most Vietnamese universities are still lack a comprehensive alignment and remain focused on certain disciplines. Many of them match the disciplines offered at German UAS, especially in the field of Science and Technology, Economy or Social Sciences. The two Vietnam National Universities (VNU) in Hanoi und HCMC are considered to be the best universities in Vietnam. Their member universities, like the VNU of Engineering & Technology in Hanoi or the VNU-HCMC of Social Sciences & Humanities, are potential partners for collaboration with German UAS. This also applies to other universities like the three regional universities in Thai Nguyen, Hue and Danang and their respective member universities, Hanoi University, Hanoi University of Science & Technology, National Economics University, National University of Civil Engineering, HCMC University of Economics, Ton Duc Thang University or Can Tho-University, to mention just a few.

Almost all universities in Vietnam are promoting their internationalisation and on the lookout for international partners. Germany belongs to the group of preferred partner countries. A window of opportunity currently exists for German UAS to find good partners in Vietnam with a promising long-term collaboration perspective based on mutual benefit.

The main goals of Vietnamese universities in cooperating with German as well as other international partner universities are:

- Curriculum development based on high standards and internationalisation of curricula;
- Co-teaching and co-supervising with German university lecturers, especially for applied science master programmes;
- Joint research activities including jointly conducted workshops and conferences;
- Exchange of students and staff;
- Training courses for the professional development of faculty staff members;
- University management counselling.

Most of these activities are intended to serve capacity building in order to develop practice-oriented curricula and modern teaching methods.

By cooperating with German partners, Vietnamese universities are also aiming to set up joint or double degree programmes and invite guest lecturers for teaching and learning. In the research area, they are seeking bilateral research projects for third-party funding by external partners, co-organising research centres and setting up joint training programmes in the field of technology transfer and research product commercialisation.

German UAS are highly acclaimed in Vietnam because of their practice-orientation in teaching and research as well as their close collaboration with partners from industry. Vietnamese universities are keen to follow these “best practices“, and learn from their German partners. In return they can profit from good and highly motivated students, for example.

- b. Recruiting Vietnamese students

The number of Vietnamese students moving to Germany for their studies is increasing steadily and is above average: for the school year 2018/19, German universities welcomed 5,400

students from Vietnam, 12.6 % more than in the previous year. Interest in studying at German UAS is very high (43.48 %).

As mentioned, 235 universities are setting their sights on developing into universities aligned towards research, application or practice. However, the universities aligning towards research also offer many applied science programmes and/or practice-oriented programmes so that a clear distinction is not always possible.

According to official categories issued by MoET (especially circular No.24/2017), the disciplines of Vietnamese universities can be divided into nine groups:

- (1) Educational Management and Teacher Training
- (2) Arts and Humanities
- (3) Social and Behaviour Sciences, Economics, Journalism and Reporting, Business and Administration, Law
- (4) Life Science, Natural Science, Mathematics and Statistics, Computer Science and Information Technology
- (5) Engineering, Manufacturing and Processing, Architecture and Construction
- (6) Agriculture, Forestry and Fishery, Veterinary
- (7) Health, Social Services
- (8) Tourism, Hotel, Sports and Personal Services, Transport Services, Environment and Environment Protection, Security and National Defence
- (9) Other

Since the Vietnamese government is promoting study abroad and wants more Vietnamese students to study at universities, especially in developed countries, Vietnam is a good market for recruitment and collaboration. In Germany, Vietnamese students belong to the group of the most successful international students. German UAS are popular study destinations in Vietnam, with a share of about 60% of all Vietnamese students studying in undergraduate programmes.

Good career opportunities following a high-quality education is the main criterion for Vietnamese students and especially their parents when deciding for a study programme and university. German UAS should focus on communicating the advantages of their strong practice-orientation, their cooperation programmes with industrial partners and the booming labour market in Germany offering attractive legal conditions for international students to stay and work in Germany after graduation. Most Vietnamese students in Germany are aiming for a Bachelor, Master or PhD degree, with only a few moving to Germany for a shorter stay and for some credits only.

With Vietnam developing rapidly and a middle class greatly interested in ensuring a good education for their children and also able to afford sending their children abroad (often with support of the extended family), the potential for recruiting self-paying students is very high. However, another important reason why Germany is a preferred study destination for Vietnamese students is because, with exception of universities in the state of Baden-Württemberg, universities in Germany do not charge tuition fees for most study programmes.

Vietnamese students and alumni can contribute towards promoting studies at “their” German university by offering testimonials. They can help German UAS to establish contacts with partners in Vietnam and understand cross-cultural differences in communication. Most of them are more than willing and proud to help.

c. Industry partners for German UAS?

Most of the German companies in Vietnam are small and medium sized enterprises (SME). Until now they have been able to satisfy their need for well qualified human resources. However, the larger companies with a higher demand for well qualified personnel often have difficulties meeting their needs. A factor applying to all companies is their need to train new staff. A frequent obstacle in the way of recruitment is the insufficient command of the English language.

To strengthen a potential partnership, German UAS need to view the collaboration in terms of a tri-partite model: German UAS – Vietnamese Universities – German Industrial partners. The network and links to German industrial partners can be set up through the German Business Association in Vietnam (<http://www.gba-vietnam.org/>) so that future opportunities can be explored and training, research and technology transfer activities be promoted and developed. Good contacts to university partners in Vietnam might also prove supportive to German industrial partners of the UAS.

d. What needs to be considered when setting up a practice-oriented partnership in Vietnam?

Collaboration with international partners and new joint study programmes or the development of curricula in particular still require the acceptance of the MoET or other relevant Vietnamese ministries, and this can prove time consuming. Autonomous universities are entitled to decide such programmes and activities on their own authority, thus speeding up administrative procedures. Since all Vietnamese universities now need to promote their autonomy (and thus their own accountability), this will prove beneficial to international cooperation.

Internationalisation is one of the important strategic goals of most universities in Vietnam, a factor that will boost international collaboration. However, the governance structure at many universities is still inadequate, with understaffed international cooperation departments or an internationalisation strategy lacking orientation.

But there is enormous interest in collaborating with university partners, especially from developed countries (e.g. USA, Canada, Australia, Europe, Japan, South Korea, Taiwan). To establish a cooperation with a Vietnamese partner and ensure smooth operations, the following suggestions might prove helpful:

- Personal contacts are the basis for a long-term, well-functioning partnership because they lay the foundation for mutual trust.
- A clear (written) definition of each institution's motivation helps to set out the objectives and achieve a mutually beneficial partnership.
- German UAS need to be aware that the main motivation of Vietnamese partners still lies in deriving support for their own capacity building and joint teaching programmes. Research objectives are becoming more important but are still secondary to these two aims.
- Vietnamese students and alumni at German UAS can prove helpful not only for recruiting efforts but also as a source of information for contacting potential Vietnamese partners or establishing a partnership.
- Good knowledge of higher education developments and policies in Vietnam in conjunction with an understanding for cross-cultural differences can prove a great help in negotiations (in English) with Vietnamese partners.

According to the German Rector's Conference ("HRK Hochschulkompass"), 164 university cooperation programmes exist between Germany and Vietnam, the second highest in Southeast Asia after Thailand (233; November 2019). Most of them collaborate without any external funding. However, the DAAD can support university cooperation projects, especially in capacity building through different programmes (e.g. Subject Related Partnerships, Biodiversity, PAGEL (for the health sector), or DIES partnerships for higher education management). The new programme "UAS.International" also offers support for partnerships projects of German UAS with international partners.

6. Conclusion: cooperation potential and challenges for German UAS in Vietnam

There are still a lot of challenges to overcome in Vietnamese HE: the move towards university autonomy has created great uncertainty among many university governors, especially those not used to, unable or unwilling to introduce new governance and decision-making models. It has also led to financial insecurity since the government will no longer be financing universities reliant on tuition fees, third-party funding in research and service for the community. The challenges facing German partners include cross-cultural differences, unfamiliar administrative procedures and a different understanding of such processes although these factors can be overcome through good preparation.

On the other hand, Vietnam's booming economy and the rapidly transforming Vietnamese HE system offer great potential for mutually beneficial cooperation programmes for German and Vietnamese universities. Vietnamese universities are moving towards greater autonomy (and accountability) and thus contributing towards more efficient collaboration. The need and willingness to internationalise universities opens doors to international partners, especially from developed countries. German universities belong to the group of preferred partners thanks to the high quality of their teaching and research and as well as their practice orientation. This particularly applies to German UAS enjoying high recognition in Vietnam.

Vietnam has a young population, the students are motivated to be successful in their studies and thus assure themselves better career opportunities. They belong to the top international students in Germany. With the Vietnamese government promoting foreign studies and German universities on the lookout for international students, a win-win-situation could come about. German UAS could greatly benefit from this situation.

There are many best practices of Vietnamese universities aligning their curricula, study programmes and teaching and learning methods with practice orientation. Some universities are already very successful at achieving a high employability rate of their graduates.

Almost all higher education institutions in Vietnam, including the best universities (e.g. the two Vietnam National Universities, Hanoi University of Science & Technology, Ton Duc Thang-University, University of Danang) are more than willing to cooperate with German UAS, despite their absence from international rankings (barring a few exceptions). This throws open a window of opportunity and could form the basis for a long and fruitful cooperation.

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