Chapter 8
The emerging business of science in Vietnam

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This chapter discusses the emerging business of science in Vietnam and how implementing a well-functioning market mechanism in academia can boost scientific productivity and in turn, generate higher quality research in the transition economy. To have a business of science, a well-functioning market for research or research-related activities as products is necessary. Here, one can define a well-functioning market mechanism is a system emerging from the accumulations of individual choices, and entities within the system are subject to competition from one another. In this system, overall economic efficiency is enhanced.

With these concepts in mind, we will first explore several dimensions of how a market-based mechanism has been introduced into the higher education system in Vietnam. Then, we will explore several challenges of for a business of science to capitalize on the gradual wave of internationalization and liberalization of Vietnam's higher education. Examples of successful business of science will be introduced next, and the chapter close with some suggestions moving forward.

> "In my opinion, sustainable scientific practices need to be built upon the demand of universities, governments, and businesses. In the country where I am currently working, universities are very strong at conducting research. In Vietnam, I feel that universities concentrate more on teaching. A part of this is probably due to financial issues: funding or business revenue from conducting research is not enough to maintain sustainable research activities. In my opinion, NAFOSTED should experiment with supporting university-based research centers. I think it can be done under co-financing format: the funding partly comes from the foundation, partly from the school to make sure all parties are responsible. Likewise, it is feasible to follow the project-based funding mechanism or even set a prize for teams that meet a specific set of goals." *Dr. Pham Van Ha, Australian National University, Australia*

Toward a market-based mechanism

In Vietnamese higher education system, the

formal administrative organization in Vietnam was best characterized as highly centralized. The literature around research and research commercialization in Vietnam often points out how the Soviet model in the past still largely influences the current situation. Universities are traditionally teaching-oriented and research is often considered to be the job of specialized institutes and academies only (Nguyen & Meek, 2016; Vuong et al., 2018). However, in recent decades, there is a gradual movement toward decentralization and a more bottom-up system.

In 2005, the Vietnamese government approved the Higher Education Reform Agenda (HERA). The reform agenda has, among its goals, aimed at expanding the private sector substantially and prioritizing the development of research and research culture. The reform aimed at increasing the enrolments from non-public universities and colleges from 13% in 2010 to 40% of all higher education enrolments by 2020, and increasing the revenue from research and development related activities to account for 25% of total revenue by 2020 (Hayden & Thiep, 2007). Indeed, HERA became the foundation for the establishments of well-known private universities later on such as FPT, Nguyen Hoang, Tan Tao, Hoa Sen, Duy Tan. Since the establishment of the first private university in Vietnam in 1994, Duy Tan University (Tran & Thanh-Tam, 2014; Tran, 2018b), non-public universities have risen to popularity due to their success in international publications. According to the 2018 ranking of Nature Index, in the top 10 research institutions in Vietnam, Ton Duc Thang and Duy Tan took the 6th and 8th place, respectively (Nature Index, 2018).

The success of these first private universities has inspired some very wealthy individuals and companies to join the game, either through philanthropic donation or through strategic investment. All of them position research as the central focus. For example, VinGroup invested VND5,000 billion (roughly USD215 million) in the first phase (until 2030) to build VinUniversity, aiming to become a university of "international standards." VinGroup has also launched VinAI Research, a publication-focused research center on artificial intelligence, in 2019. Regarding philanthropy, in 2018, Phenikaa Corporation, the owner of Phenikaa University,

has invested VND500 billion (roughly USD21.5 million) in the "Science and Technology Research Fund" to support basic science research in Vietnam. Phenikaa Corporation has also signed an agreement, committed to providing financial support in three consecutive years (2019-2021) for one of the most prestigious science awards in Vietnam, the Ta Quang Buu Prize (NAFOSTED, 2018). Indeed, these developments show that one cannot discount the role of the private sectors and philanthropic actors such as Ho Xuan Nang Science Foundation or VinGroup Innovation Foundation in shaping the path of development for science in Vietnam.

As for the government, realizing that public universities need to improve their efficiency as well as their overall rank in worldwide rankings, the government has been experimenting with increasing their institutional autonomy. By the end of the academic year 2016-2017, 23 pilot public universities have been conferred more freedom in setting their own agenda for training, research, human resource, and budget planning, as well as taking responsibility for it (Resolution No. 77/NQ-CP, 2014). Despite being empowered by the government program, public universities still suffer from the tension between the desire for decentralization and the desire to maintain the socialist orientation in higher education (Tran, 2014). Moreover, common challenges such as the lack of professional staff, the inadequate resources, the institutional rigidity, and a poor understanding of the market have proved to be challenging to overcome (Nguyen & Tran, 2018).

Not only are the government and private organizations pushing forward the market mechanism and research activities, but international donors are also exerting a greater degree of influence. The Asian Development Bank and the World Bank are stated in a government announcement to lend USD400 million to Vietnam to build four "international standard" universities (London, 2011). In addition, Tran (2018a) noted the World Bank stands out as the most massive investor in reforming higher education in Vietnam, having provided a credit of USD140 million until the year 2000 to help to build a higher capacity of education (London, 2011). And from 1998 to 2017, World Bank's policy-based lending programs have amounted to USD450 million (Tran,

2018a). Besides focusing on smaller-scale projects such as curricular reform and teacher training, the World Bank has strongly emphasized on measures to increase cost efficiency and the role of the market. According to Tran (2018a), as the bank has gone beyond the role of a donor, or a policy advisor, to become a policy actor, it is the most influential international organization in Vietnam's higher education reform. The efforts of the World Bank have achieved concrete results: the issuance of a series of legal documents that have kickstarted the current trajectory of Vietnam's higher education system.

Analyzing the current situation, previous studies highlighted the overreliance on policy-borrowing in Vietnam. As Vietnamese culture has possessed certain peculiarities (Vuong, Bui, et al., 2018), too much policies and institutional structures importing from the West would create conflicts. Researchers have urged a balanced reconsideration this trend (Nguyen & Tran, 2018; Tran, 2018a; Tran, 2014). The domestic players in the country, hence, must take a more pro-active role in shaping the higher education system.

We suspect that introducing the concept of business of science can help stimulate the bottom-up responses to generate a more productive, pro-active research culture. The following section discusses the challenges of the emerging business of science in Vietnam.

Challenges of a sustainable business of science in Vietnam

As Vietnam gradually transitions to become a more liberalized and internationally integrated economy, its higher education system also moves forward in this direction. However, for a business of science to capitalize on this wave of internationalization and decentralization, organizations and individual researchers in Vietnam must address the following challenges.

First, there must be a stronger presence of an entrepreneurial spirit among organizations and individual researchers in Vietnam. Nguyen and Meek (2016), when seeking to identify the key problems in organizing and structuring university research in

Vietnam, highlighted the lack of entrepreneurial spirit and vision when it comes to research-related personnel and research office. Through 55 semi-structured interviews in four major universities in Vietnam, the authors found university academics and managers perceived the rectors and vice-rectors of research more effective as "disturbance handler" than as an "entrepreneur." Moreover, the research office was perceived as more effective in "organizing" and "controlling" than on "planning" and "leading" roles. In another related study, Nguyen and Van Gramberg (2018) identified the lack of strategic planning for research among the four universities in Vietnam, although they all aim at being leading research institutions in the country. Rather than planning research activities based on long-term strategies, the universities have chosen a compliance-based planning approach. More specifically, the universities in this study followed grant application procedures prescribed by administrative funding agencies annually rather than proactively creating long-term deliberate strategies to secure government grants. Besides the government grants, researchers in these universities are eligible to apply for funding from a wide range of international and domestic organizations. However, Nguyen and Van Gramberg (2018) showed that at universities level, there had been no serious plan for it. This is perhaps another expression of the absence of entrepreneurial spirit among public universities in Vietnam.

Not only is there a lack of entrepreneurial spirit at the university and institution level, there is also insufficient experience among academic staff in Vietnam when it comes to the commercialization of scientific production. Indeed, the amount of contribution from research to income of the higher education system in Vietnam is minuscule. Tran and Villano (2017) found that the percentage of academic staff with postgraduate degrees was not significantly associated with the efficiency of universities, especially in terms of income from research. It is, therefore, not surprising that, according to a recent study, the revenue from academic activities remained negligible, accounting for only 3% (Hoang, 2018). This number clearly falls short of HERA's target for income from research to account for 25% by 2020. Pham and Hayden (2019) pointed out although most academics in Vietnam feel a personal commitment to engage in research, the institutional pressure for

international publications is still low. There appear to be several disincentives to publishing in international journals, including the lack of financial support, the lack of transparency in funding, the interference with academic freedom and the lack of language skills (Pham & Hayden, 2019).

Another challenge that should be addressed is the contradictory legal mandates coming from different ministries. While the Ministry of Science and Technology has issued a number of regulations to induce some changes in the systems of funding and human resource management in public universities and institutions, these regulations meet considerable barriers from the law on tax administration, and the law on public employees, cadres and civil servants (Hao-Linh, 2019). In this regard, one can argue that private universities and institutions, which are not the subject of the law on public employees, cadres and civil servants, enjoy relatively more freedom to create a better incentive system for research activities in Vietnam. However, there are many more researchers working for public universities and institutions than in private ones in Vietnam. In light of this fact, the contradiction in different legal mandates remains an obstacle for the development of the business of science in Vietnam in the near future.

What is a business of science? Examples from successful cases around the world

We propose to define the *business of science* as a business where research and research-based activities and contents are the products. More specifically, this business would offer services such as research, science communication, science journalism, data collection, data analysis, and software developments, to name a few. The obvious examples of science-based business are the commercialization of scientific products, which has been taking place in various fields, from materials science (Editorial, 2006), biomedical marketing (Nelson, 2012), biocontrol products (Droby, Wisniewski, Teixidó, Spadaro, & Jijakli, 2016). Thanks to the permission to patent state-funded research in developed countries such as the United States, United Kingdom, and Japan, an increasing number of researchers have been able to take financial advantages of this practice (Editorial, 2006).

Pisano (2010), using the example of the development of science-based business such as biotech start-ups in the U.S., argued that science and business are two very different fields and that the convergence of the two will necessarily create frictions. This would call for organizational innovations to solve problems on three fronts: risk, integration, and learning. In terms of risk, the iterative research and development (R&D) process of science-based business usually takes a long time to solve the fundamental uncertainty problem. In terms of integration, a successful business of science must be able to integrate and combine relevant existing bodies of knowledge. As a business of science must find a way to integrate existing disciplines and solve the problem of uncertainty, first and foremost, for their survival and thriving, it is important for them to implement a learning culture in all levels of the organization: learning how to take risks, how to learn from failures, how to make decisions under immense uncertainty. Pisano (2010) indicated the limits of the "visible hands of the hierarchies" and the "invisible hand of the markets" in solving these three problems. He suggested when designing a business of science, the goal would be to design it to be good at "managing and rewarding long-term risky investments, integrating varieties of bodies of knowledge, and learning cumulatively over time."

However, as he only grounded this account on high-tech areas such as biotech, nanotech, and energy, he had overlooked the possibility of entrepreneurial firms that take other fields such as social sciences and humanities as the foundation of their business. Moreover, as Pisano (2010) published his article when there is little understanding of a new economy powered by the abundance of data and the advancement in computing technology, he might have missed the important implications of these factors for science-based business.

In recent years, the frenzied development of advanced computational platforms, social networks and high-speed Internet connectivity has generated business opportunities in velocity and volume the world has never seen. Business and technology researchers have called this trend by different names: "computational entrepreneurship" (Vuong, 2019), "the digital

economy," "the gig economy," "the sharing economy," "the platform economy" (Bodie, 2017). Entrepreneurs in the business world are seizing these opportunities and turn them into enormous economic successes; the same trends can also be observed among their academic counterparts. One of most successful examples of academic entrepreneurship in the age of social networks is the Intellectual Dark Web, a group of public intellectuals who started their own podcasts/YouTube channels, regularly publishing long-form conversations, discussing all kinds of subjects covering religions, politics, science, philosophy. To get a sense of how each of them is an Internet sensation, Sam Harris, a neuroscientist, told the New York Times that his "Making Sense" podcast is estimated to reach a million listeners each episode; Dave Rubin, a conservative commentator and comedian, said his YouTube channel has more than 700,000 subscribers. All of their works are funded by their fans; for example, Jordan Peterson, a psychology professor in the University of Toronto, shared that he made USD80,000 in fan donations. Their online success has translated offline as they are found talking to one another in packed auditoriums around the world and their books are found in the best-seller sections (Weiss, 2018).

"The role of funding depends on the type of research. For instance, the research that is based on freely available, open access information would only need financial support for the working hours of the researchers, which is the salary. On the other hand, finance will be a major concern for a research project that requires a large-scale survey. In my opinion, researchers can still perform with a limited budget, they only need to be clear about what they can and cannot do in that situation. Therefore, it is perhaps an overstatement to say that the lack of budget is restraining the development of SSH."

Dr. Giang Thanh Long, National Economics University, Hanoi, Vietnam.

We can also list other examples of successful academic start-ups such as Publons. Publons is a start-up firm that creates a platform for scientists to share their peer review history on the Internet to get credit for doing the peer review, a pillar of scientific process. By June 2017, there were more than 150,000 researchers who registered with Publons, and together, they have shared 800,000 review records on the website (Van Noorden, 2017). On 2017, Publons were bought by Clarivate Analytics, the owner of

the giant science-citation database Web of Science. The data provided by Publons have clearly enabled a wide range of valuable insights into the global state of peer review. For example, we now know peer reviewers for high-quality journals write on average 300 more words than they do for other journals; or reviewers for psychology, humanities, earth sciences tend to write longer review (Conroy, 2018); or the peer review community is not diverse enough (Publons, 2018). Clearly, Publons is a shining example of a business of science that takes advantages of advancement of technological platforms and generates both social and financial profits.

The emerging business of science in Vietnam: the role of academic entrepreneurship

As noted above, there are numerous challenges to build a sustainable business of science in Vietnam. The challenges range from the influence of the Soviet model of higher education in the past, the lack of entrepreneurship spirit among research institutions, the lack of a robust research culture, the passive attitude of researchers in finding ways to commercialize their research products. In this section, we focus on the important mindset and skills necessary for the owner of the business of science, the researchers themselves.

The different examples of successful science-based business strongly indicate the importance of a pro-active mindset among researchers to seek and seize opportunities to commercialize their research products. Here, the general principle of academic entrepreneurship can be useful. Built on the generic definition of entrepreneurship by the notion of Stevenson, Roberts, and Grousbeck (1989), Glassman et al. (2003) argued that academic entrepreneurship is essentially about the creation and pursuit of opportunities in the university setting, regardless of available resources. The ability to scrounge for or scavenge scarce resources, which has been highlighted in the literature on public entrepreneurship, becomes a skill that academic entrepreneurs cannot do without in the process of creating values (Glassman et al., 2003). Glassman et al. (2003) identified four dimensions that influence the degree of success for academic entrepreneurs: (i)

opportunities, both actual and potential; (b) people who can identify and seize opportunities; (c) the ability to generate as well as optimally use resources; and (d) an entrepreneurship culture.

For the first three dimensions, arguably, one cannot dispense with the role of judgment and intuition; Pisano (2010) has claimed, "Judgment and intuition must suffice where "hard" data and good predictive models are lacking," as a formula of success in the emerging business of science. Adding to this discussion, one can also list serendipity, defined as the ability to recognize and leverage value from unexpected information that comes from all areas of life, among one of the critical strategic advantages (Napier & Vuong, 2013). Indeed, not only the science-based business owners must have a strong entrepreneurial spirit, but they also need to rely on sharp intuition and judgment to successfully capture and deliver value in this market.

More importantly, as a business of science is supposed to offer research and research-related contents and activities as products, the gold standards of scientific conducts must be upheld: oversight committees, a mechanism to maintain research integrity, a mechanism to evaluate research quality, developing professionalism in research. Nguyen and Meek (2016) have listed such elements as lacking in the situation of Vietnam, creating a tremendous barrier for developing research capacity in the country. However, in the paradigm of building a business of science, entrepreneurial researchers must actively find ways to establish such standard practices. One suggestion is that researchers can work together to create these integrity-safeguarding practices to ensure that the self-correcting mechanism of science is at work. The Institute of Social Development Studies, Hanoi, Vietnam, an NGO and NPO that focuses on solving social problems by applying knowledge gained from research, is an example in this regard. The research institute regularly trains its members when conducting research with human subjects and establishes an internal review board to make sure the research process complied with the international standard (Khuat et al., 2018).

With regards to social sciences and humanities, especially in a transition economy such as Vietnam, the opportunities to commercialize research products based on patent might be rare. However, as shown by the example of the Intellectual Dark Web (Weiss, 2018), their work on social and cultural phenomenon, with a right kind of packaging, can reach out to a public through the deployment of science communication. Websites such as sc.sshpa.com or Tiasang.com are currently the front players in the nascent science communication sector in Vietnam. They work to educate the public about important issues in science such as new scientific discoveries, movements in science as well as science policies. Another area that social science researchers can find opportunities is social data and its construction and management. Without a strong technical and computer background, this prospect of going into data/database management can be daunting. However, the availability of computing resources and talented collaborators can compensate for these shortcomings, as shown in the case of Publons (Van Noorden, 2017). This book and the database, on which it is based, can also be considered an attempt on business of science, which takes advantage of available resources online to create social database and software that have potential business values (Vuong, La, et al., 2018).

As a business of science is centered around research, a research project should be a unit for management. Here, it is important for science-based business owners to define success in managing a life cycle of a research project. As for any business activities, the ultimate measure of business success is profitability. However, in the beginning of a business of science, especially, when the business is focusing on building its brand, success should be measured by the number of articles published, the number of articles published in highly prestigious journals, the number of clean and tidy datasets produced for science and society, the number of data management procedures and data treatment procedures invented. All of these metrics should all be tied down to the most important one: peer-reviewed publication. This is also a training phase for the members of the start-ups, to learn necessary research skills and critical thinking skills to be successful as researchers. Once the brand for the business is established, the business owners could move on to the "business

phase." In this phase, the business can take on products and services that are derived from their research: speaking engagement, science communication, consultancy services, etc.

Vietnamese researchers, many of whom have experience international environment, can look outward and learn from their colleagues overseas how they could commercialize scientific knowledge. However, in the end, for that commercialization to succeed in Vietnam, the researchers must do more than mere copy-paste: they must look inward and design their products according to cultural expectations and local demands, all of which are critical for their success.

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