Chapter 6
The question of quality

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Previous chapters in this book have discussed the quantity aspect of research on social sciences and humanities (SSH) in Vietnam. We have touched on the national productivity, the rise of scientific publications, and the ways Vietnamese researchers adapt to the changes. This chapter now turns to the quality aspect of research publications. In order to achieve the outcome of high-quality publications, there has to be a synthesis of at least three elements: (i) an institutional push, whether that be professional or financial incentives, state or non-state resources, (ii) the application of international standards, such as indexed peer-reviewed journals, replicable and reproducible data and research projects, and openly accessible, and (iii) adherence to research ethics. The framework in Figure 6.1 is used to examine the issue of quality in Vietnam's SSH research.

Figure 6.1. Three fundamental elements for producing quality publications

The institutional factor

In popular culture, scientists are often portrayed as eccentric and working days and nights in the basement. It is a stereotypical and largely inaccurate portrayal. One thing is true, though, that scientists do spend a lot of time working. A 2016 survey from Nature shows that 38% of surveyed early-career researchers work more than 60 hours/week, while 9% of all researchers work more than 80 hours (Woolston, 2016). Why do scientists need to work that hard? David Labaree compares academics with Easter egg hunters, whose career is purposely aimed for achievements: fellowship, editorship, managerial roles, member of committee, awards, and publications in prestige journals (Labaree, 2018). Yet, scientists, especially social scientists, do not conduct research in a vacuum—not only are the subjects of their research concerned with the society, their relationships with society also determine many aspects of their works. Throughout this book, we have noted the expansion of collaborative research networks within and beyond Vietnam. These networks are sustained thanks to the tireless efforts of researchers at home and overseas as well as to the institutional support. Three types of institution play an important role in this process.

> "High-level scientific research certainly does not come cheap. Under the current economic condition in Vietnam, it is probably not possible to invest in all fields. There should be a national independent committee that specializes in identifying scientific fields that are worthy of ambitious investment. For example, Taiwan's semiconductor technology provides a valuable lesson. If we have one or two fields that reach the "top," it is better than having all fields being mediocre. Moreover, when the budget is limited, the efficiency of funding is critical. Unfair competition in accessing research funding is the factor we should be worried the most about at the present." *Dr. Tran Dinh Phong, University of Science and Technology of Hanoi, Vietnam*

First, the state has to initiate the promotion of science and scientific value through concrete actions, such as measurable policies and transparent investment. There are even state-led movements to commercialize academic advances derived from highly-successful research projects. In developed countries such as the United States or the United Kingdom, state-funded research projects have yielded a stable output of such products (Williams, 2005).

Second, non-state actors should also be encouraged to take on more responsibilities toward the national research and development (R&D) scene. Cases from developed countries once again highlight how the private sector can make meaningful contributions to science through various means. Notable examples include the gigantic sponsorship from the Bill & Melinda Gates Foundation or the initiatives of Ernest Solvay to pull together the top-notch experts for discussions about the most critical topics of all times. Aside from financial support, contributions could also be the devotion of time and efforts such as the case of Elon Musk leading numerous crucial projects by Tesla, Hyperloop, and SpaceX. Similarly, in Japan, there is a proliferation of academic start-ups and huge investment into this area (Ichiko, 2006). According to research by Nikkei Inc., in the fiscal year of 2017, approximately 40% of major Japanese corporations had spent a combined amount of USD107 billion on R&D, which marks a record-breaking surge of 5.7% year-on-year (Nikkei, 2017). Non-state investments in R&D, even if they are driven by profitability concerns, in this sense can still create a ripple effect across society—scientists are motivated to work, quality products are created, and society members get to reap the benefits.

Third, higher education institutions themselves have to create the right environment and incentives to facilitate the work of researchers. An example that best illustrates this point is the case of China where a large amount of state and non-state money has been poured into basic science. It is estimated that investment for scientific research in China can jump by three-fold from 2010 to reach USD34.5 billion in 2020 (Xin, 2016). On average, co-authoring in a *Nature* or *Science* paper could bring Chinese scientists a prize of USD44,000 each in cash (Ball, 2018). Non-financial investment and support for science development in China are offered in the form of tenure tracks and/or overseas training opportunities to lift labor productivity in research. It is clear, however, that the superstars from prestigious institutions would have more chances, and indeed, researchers from big economies will have more opportunities than their colleagues in the smaller economies.

Using the above lens to look at Vietnam, we can see the growing presence of all three types of institution. Here, the private business sector and the educational establishments are grouped together as non-state actors for the purpose of examination.

State actors

Among the baby steps taken by the Vietnamese government to boost scientific productivity was the reform made by the National Foundation for Science and Technology Development of Vietnam (NAFOSTED). Accordingly, projects that seek NAFOSTED grants must meet the minimum requirement of two to three articles published in international indexed journals. More recently, in April 2017, Circular 08/2017/TT-BGDDT issued by the Ministry of Education and Training set a higher standard for PhD candidates in terms of academic publishing. As such, a PhD candidate can defend his/her thesis only when the research result is published internationally in peer-reviewed or ISI/Scopus-indexed journals or conferences.

The conditions have pushed the academic sphere in Vietnam toward an inevitable change, particularly for SSH, where standards were already outdated. These requirements are not only indispensable for research fellows and mentors; scholars are also required to fulfill the same criteria of publication count to be eligible for project applications and research grants. While the new standards sparked controversy regarding its legitimacy, especially the pertinence of the criteria, one could not deny that the regulation has brought forth awareness for scientific credentials and international qualifications. As a more concrete result, the reform, though initially thought of as only of administrative order, has offered a set of criteria for academics and institutions alike to gauge their own merits, productivity and competitiveness, not only among themselves but also in an international context.

The criteria, in fact, have started to raise the bar for the quality of scientific production in Vietnam by creating competition between Vietnamese universities. Universities are now ranked based on scientific production – namely, the number of publications affiliated with them. They in turn wanted to improve productivity to climb the ranking table. To do this, there are various possible strategies. One of those is to set standards: for example, a university in Hanoi only considers scholars with over 40 publications in ISI/Scopus for tenure tracks. Another strategy is to offer monetary recompense for each publication that a researcher affiliated to them authored (Vuong, 2019).

This has truly had an effect on scientists, encouraging them to produce more all while making them aware of the – both global and local – race in quality.

Non-state actors

Just as universities in China, a growing number of Vietnamese universities have begun to offer monetary rewards for international publications, only far lower in value. On average, compensations given out by universities to affiliated scientists for international publication range from USD1,000 to USD2,000 per article/book. Notably, as of 2017, an ISI/Scopus indexed article, stated as the highest tier of award, could earn the author a bonus of USD10,000 if said author was affiliated to the University of Social Sciences and Humanities, Vietnam National University Hanoi (Vuong, 2019). Besides universities, state organizations also issue policies to promote international research publication, mainly supporting young scientists who are not affiliated with public academic institutions. For example, research conducted in Vietnam could be filed for grants covering the incurred implementation and labor costs as well as article processing charge (APC) by NAFOSTED (NAFOSTED, 2019).

Increased support and investment have resulted in significant growth of publications from Vietnam (Manh, 2015; T. V. Nguyen, Ho-Le, & Le, 2017), but in comparison with ASEAN member states, Vietnam remains far behind (T. V. Nguyen & Pham, 2011). However, within the field of SSH, which previous chapters in this book have thoroughly discussed, the overview picture offers a significant development and change.

International standards

Getting indexed in reputable databases

Along with the aforementioned regulation on qualifications for research fellows and doctorate mentors, NAFOSTED has published a list of reputable international journals for reference. Basically, if an author had published articles, but these works do not figure in journals on this list, then those articles would not count. In order to dress up this official list, the databases of ISI Web of Science and Scopus – the two big names in scientific indexing – have been used.

The Web of Science (formerly Web of Knowledge) database is a product of the Institute for Scientific Information (ISI), founded by Eugene Garfield. Besides the Web of Science, ISI also owns other highly influential tools in scientific productivity assessment, such as the Journal Citation Reports – which tracks the Journal Impact Factor (JIF) of all indexed journals and updates yearly in the last week of June. In 1992, ISI was bought and developed by Thompson Reuters and, in 2016, transferred to Clarivate Analytics.

In the academic community, referring to ISI is equal to referring to the Web of Science (WoS). ISI has so far indexed about 15,000 journals, 50,000 academic book titles and about 160,000 conference proceedings in various fields. The ISI Web of Science system also provides other indexing services, the most important being the Core Collection of the most important sub-databases, as follows:

- Science Citation Index (SCI);
- Expanded (SCIE);
- Conference Proceedings Citation Index (CPCI);
- Social Science Citation Index (SSCI);
- Arts & Humanities Citation Index (AHCI);
- Book Citation Index (BCI);
- Emerging Sources Citation Index (ESCI).

ISI WoS held the monopoly of leading scientific databases until 2004, when Scopus was born under Elsevier's wing and became a proper counterweight. Scopus indexes approximately 21,500 journals, 131,000 book titles, over 7.5 million conference proceedings. The Scopus database also has its own measure of impact based on citations called CiteScore, in competition with the JIF. It should be noted that Elsevier is a large publishing house, which means that the potentials of Scopus lie in the fact that its database is much more sensitive to new developments in academic publishing than WoS, which only specializes in indexing and data recording. As Scopus builds up its footprint as a true giant in the realm of scientific indexing, it has become a reliable source of reference on scientific investment in the official reports by many world powers such as the United States, Russia, China, Spain, France, the United Kingdom, and Belgium, etc. Renowned rankings such as Times Higher Education or QS World University Ranking also uses Scopus and SciVal algorithms to calculate the most important scores: productivity, effectivity and academic reputation.

Striving for higher JIF, CiteScore

The two largest scientific publication databases in the world, WoS and Scopus, have each developed their own indicator of academic reach: Journal Impact Factor and CiteScore, respectively. The Journal Impact Factor was created, along with the Web of Science, by Eugene Garfield. Since then, indexing systems and impact factors have grown to become one of the most important criteria in expert assessments of the influence of journals.

The Journal Impact Factor of a scientific journal is calculated as follows: total number of citations in a year (denoted year *t*) of all articles published from two years back (year *t-1* and year *t-2*) divided by the total number of articles published from two years back. Every June, the Impact Factor is published in Journal Citation Reports (JCR), which has for a long time garnered attention from the entire academic world. A particular point to note is that JCR contain a list of all journals publishing their JIF for the first time. It often happens that journals often receive large influx of manuscripts after their first publication of JIF. Similarly, journals that have a boost in JIF according to JCR would also see the number as well as quality of manuscripts skyrocket. Though few may dare to admit, the truth is that most journals would pride on a slim acceptance rate, which could only be enhanced with a high number of manuscripts sent to them. In fact, the more manuscripts they receive, the more they get to pick and choose for solid papers. Given the effect of JIF on the number of received manuscripts as detailed above, it is no wonder that publishers would prefer their journals to grow in JIF. This growth would create a positive feedback loop, a virtuous circle of: a considerable number of manuscripts would lead to stronger publications, therefore higher impact and subsequently JIF. This, in turn, would bring in even more, higher quality manuscripts.

Scopus released CiteScore in December 2016, which quickly gained attention due to Scopus' existing influence. The method of calculation for CiteScore is similar to that of JIF; except that the data used for computing stretch back 3 years rather than 2. Scopus also produces reports the CiteScore points of journals every May. One may even speculate that Scopus has done this on purpose, in order for their annual reports to be released before the traditional JCR of Web of Science every year. A feature unique to CiteScore is that one can observe monthly fluctuations of the indication using CiteScore Tracker, without having to wait until May.

CiteScore is used freely among journals indexed by Scopus as long as there are sufficient data, whereas the Journal Impact Factor is only available for journals under SCIE and SSCI. Other Web of Science indexes, such as AHCI or ESCI, despite being just as prestigious, do not provide their journals with a JIF. Consultation of the CiteScore indicator is also free of charge (at a basic level), in contrast to the paid services of Web of Science.

In addition to JIF and CiteScore, there exists a multitude of other indicators that are country- or region-specific, such as C-SSCI of China, T-SSCI of Taiwan, or ACI of ASEAN, etc. They typically don't "count" as much as the classifications made by the giants ISI and Scopus. It should also be mentioned that highly prestigious publishers or systems of journals might become their own type of indexing. *Nature* and *Science*, for example, consider being published in their journals as a type of "indexing" in itself. *Nature* also has its own Nature Index and publishes its own reports, equally as looked forward to as those of the JIF and CiteScore. The only difference: Nature Index has a very restricted coverage and is considered by academics to be a sort of Pantheon.

The reference of impact factors as a means to measure quality of research is much controversial. Most of the opposers argue that quality assessment of research based on JIF/CiteScore of where it comes out is indeed invalid since this index is an average. The way this figure is computed means that it could be lifted by some exceptionally highly cited papers and does not represent the citation count of most other articles in that journal. It is, therefore, unreasonable to deem a research good quality solely on the basis of its journal statistics.

Likewise, impact factors are relative and thus are not adequate for use as a general reference framework of comparison. For example, in the discipline of philosophy, the highest CiteScore that could be found is 2.59 (*Journal of Political Philosophy*); however, in the field of human resource management and organizational behavior, the indicator could go up to 11.96 (*Academy of Management Annals*). This may in fact be explained by the varying degrees of openness across disciplines. Concretely speaking, fields such as philosophy or culture studies would have a harder time getting citations compared to "hot" subjects such as economics or finances.

> "To select a suitable journal to submit one's article is an important task but is equally difficult for those who lack experience. [...] The average rejection rate in social sciences is 70%, i.e. only three articles are accepted out of ten submissions, with the rejection rate in some journals as high as 90%. If an author wants to submit their work to a journal with a high impact factor (JIF), they must modestly and seriously evaluate the research work to see if it would meet the requirements of the journal. Otherwise, it could be a waste of time." *Dr. Le Van Canh, Vietnam National University Hanoi, Hanoi, Vietnam*

Entering the 1% of the academic world

The hunt for Easter egg requires a perpetual journey of raising the standard. As a PhD candidate, two peer-reviewed articles are enough, but growing in academia will always ask for more publications with better quality. Thus, the big names, such as *Nature*, *Science*, or *PNAS*, become the ultimate Easter eggs. These over 100-year-old journals, which are homes of the biggest scientific break-throughs in the history of mankind, make up the top 1% of the academic publishing world for their superb indices of impact level.

Having their research published in top-tier journals, whose acceptance rates are often below 5%, could be a career boost opportunity to most scientists. In fact, a *Nature* or *Science* paper is considered equivalent to membership grant of an elite club with privileges of speech invitations, research funds, tenure positions or cash rewards. It is even more so in developing countries such as China or India where getting a paper into the leading titles means straight salary increase and bonus since it is the ranking of the journal, not necessarily the quality of the work itself, that concerns most people (Reich, 2013).

Meanwhile, in Vietnam, the progress is somewhat behind when the standards are limited at minimum level of ISI/Scopus indexed journals for eligibility to research funding or academic titles. This could be in part attributed to the various hardships that emergent countries such as Vietnam have to face as they catch up to the international academic sphere (Vuong 2019a). However, it can be seen that the quality race in this emerging market has kicked off with the rise of pioneer academics having research of JIF ≥ 5 in the second half of the 10-year period (Table 1). It will not be long until JIF/CiteScore and top-tier titles become widely known or even the new legitimate standards, as it is unlikely for Vietnam to stay out of the global game.

Articles	Authors	Journals
The (ir)rational consideration of the cost of science in transition economies	(Vuong, 2018b)	*Nature Human Behaviour*
Policy uncertainty, derivatives use, and firm-level FDI	(Q. Nguyen, Kim, & Papanastassiou, 2018)	*Journal of International Business Studies*
Eco-efficiency analysis of sustainability-certified coffee production in Vietnam	(T. Q. Ho, Hoang, Wilson, & Nguyen, 2018)	*Journal of Cleaner Production*
Regional research priorities in brain and nervous system disorders	(Ravindranath et al., 2015)	*Nature*
Postpartum change in common mental disorders among rural Vietnamese women: Incidence, recovery and risk and protective factors	(T. T. Nguyen et al., 2015)	*British Journal of Psychiatry*
Effect of Facilitation of Local Maternal-and-Newborn Stakeholder Groups on Neonatal Mortality: Cluster-Randomized Controlled Trial	(Persson et al., 2013)	*PLOS Medicine*

The Effect of Intermittent Antenatal Iron Supplementation on Maternal and Infant Outcomes in Rural Viet Nam: A Cluster Randomised Trial	(Hanieh et al., 2013)	*PLOS Medicine*
Cohort Profile: The Young Lives Study	(Barnett et al., 2013)	*International Journal of Epidemiology*
Trends, drivers and impacts of changes in swidden cultivation in tropical forest-agriculture frontiers: A global assessment	(van Vliet et al., 2012)	*Global Environmental Change*
B_{MEY} as a Fisheries Management Target	(Grafton, Kompas, Che, Chu, & Hilborn, 2012)	*Fish and Fisheries*

Table 6.1. Top ten SSH publications with highest JIF in Vietnam from 2008 to 2018

Research practices and ethics

It is foreseeable that without established regulations and measures to improve the assessment of research quality, Vietnam would undoubtedly fall into the same trap of brand name chasing as mentioned earlier. As a latecomer to the market with mostly inexperienced researchers, Vietnam needs to find ways to stimulate academic development in a professional manner, and keep an appropriate attitude in these aspirations (Vuong 2019b). While too much focus on top-notch journals might discourage young researchers from pursuing the academic pathway, successful publication in some less competitive outlets with more positive peer-review experience would definitely be a pleasant start for their later, more ambitious goals (Arvan, 2016).

Even though JIF/CiteScores and journal acceptance rates can provide a quick capture of the significance of the research at some point (Tregoning, 2018), they are by no means sufficient and comprehensive criteria for quality evaluation of academic works (Wouters et al., 2019). It is the validity of research methods and reliability of produced results that are fundamental when examining the soundness of a study. In fact, for sustainable and realistic advancement of research quality, the country needs to develop mechanisms that support and stimulate quality-wise inspection of publication through transparency of data collection and analysis as well as replication of research findings. Here, we discuss two topics that could improve the quality of research publications: (i) the adoption of the Open Access movement, and (ii) the promotion of science communications.

> "In the current social conditions of Vietnam, I think that the difficulty of ensuring the reliability of data might result from the negligence of Vietnamese scientists in organizing data as well as making the data accessible for peer-review and public replication after being published. Providing open access to data is now a common practice in leading Economics journals, so I believe it will be a scientific trend in the future." *Dr. Pham Si Cong, Deakin University, Victoria, Australia*
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> "I think that it is necessary to invest in data-generating activities, for example, the access to databases of the General Statistics Office, original databases of state-level and ministry-level projects, and international databases." *Dr. Tran Van Kham, University of Social Sciences and Humanities, Hanoi, Vietnam.*

To be replicable, reproducible, and accessible

While debates surrounding impact factor have not yet resolved, SSH research worldwide has to face the 'replication crisis' (Loken & Gelman, 2017). Due to a high rate of replication failures, the scientific community has raised concerns about the validity and reliability of results in SSH studies. As reproducibility has emerged as a core quality issue, the demand for transparency and open access of data is growing and gradually transforming the publication industry. The drive behind the open access movement, and more general, Open Science, is to facilitate replication and triangulation of findings from different places all over the world, which helps save researchers from time, efforts and costs of doing the same works all over due to lack of access to similar datasets and study projects.

In September 2018, Robert-Jan Smits proposed a radical change for science: Everything has to be open (Else, 2018). Plan S immediately receives supports in Europe, and later the United States, China, and influential funders. Even though Open Access movement is slow in gaining attention, Plan S is definitely the game changer. With the support and joining of national, international and private funding agencies such as Welcome Trust and the Bill & Melinda Gates Foundation into the Open Access Coalition, all scientific publications subsidized by 13 National Funding Agencies and 4 non-profit funding organizations will have to become freely accessible since January 1, 2020.

Publishers have also made movements to adhere to core principles of Plan S that seek to retain authors' copyrights and secure their ability to publish openly regardless of financial capacity. However, there needs to be ample time for changes to take place comprehensively. Some journals have switched to the hybrid model of open access which offers a mix of openly accessible articles whose APC is paid by authors or funding agencies and restricted publications that requires subscription fees. Despite its signaling a step forward to the OA movement, the model faces harsh criticisms for making authors and readers shoulder the financial burden. In general, even though arguments regarding hybrid open access journals, fair APC and timing have not been settled, many of the journals have agreed on a possible renovation of mechanism in order to better serve the public and stimulate the dissemination of research results.

Compared to the hotly debated situation worldwide, the publication scenario in Vietnam is rather isolated and outdated. Except for a very limited number of journals (all in the field of natural sciences) indexed in the Directory of Open Access

Journals, almost all Vietnamese academic journals resemble the Western model in the old days, which can be characterized by the prevalence of paper-based, restricted access and an anonymous peer-review process. The key words Open Access and Open Science are rarely discussed or even heard of by most researchers in Vietnam. In the absence of established criteria for quality control, it is critical for the mechanism of publication in such an emerging context as Vietnam to stay as open and responsive to supervision and feedback from expert scientists as possible. It is only through open discussions and peer-to-peer challenging that awareness of and concerns for authentic quality are raised, conditioning for a clearly defined system of criteria and standards to measure and optimize the quality threshold of Vietnamese research. Vietnam could see its future in the case of China where the Government is proactive in constructing clear definitions and criteria for the supervision of scientific research and publication, based on which low-quality journals are blacklisted when applying for funding and grants (Jia, 2018).

Besides the OA movement, Open Science also initiates changes addressing other aspects of the publication industry. For example, transparent peer-review processes that makes reviewers take responsibility for their feedbacks and arguments by revelation of identity helps improve the quality of peer review and publication in general. In addition, the development of pre-registration platforms facilitates the transfer of research findings, data, computer codes, as well as experiment procedures and protocols. The preprint culture also helps address ethical issues such as plagiarism by easing and shortening the process of registering ownership over academic outputs.

In developing countries where scientific practices are not as established as in Western societies, integrity is an alarming issue topped up by the lack of clear regulations of quality inspection and intellectual property. Recently, China has pioneered to approve penalties of scientific misconduct cases. Under the controversial social credit system, Chinese scientists who violate the codes of conduct in scientific research will be restricted from bank loan access, job application and business foundation and operation (Cyranoski, 2018).

Intellectual ownership and codes of conduct in scientific research are rather novel concepts to most Vietnamese people. The prevalence of misconduct incidents in Vietnam could be attributed to the lack of social awareness and the vagueness and incoherence of legal regulation concerning this issue (Vuong, 2018a). The consequence is often violators easily getting away unpunished while victims appeal in vain. Together with measures to improve knowledge and awareness of research ethics and integrity, promoting the use of open online resources and platforms is expected to help improve transparency of system and liberate the research industry in Vietnam from mistreats and misconducts.

To be understandable: the role of science communications

What is the ultimate goal of scientific development in Vietnam? As a member of the public, and also as a researcher, we cannot content ourselves with simply running after high numbers without pondering over what we truly hope to achieve beyond academic credentials. Much of the above discussion in this chapter has inferred a need for renovation of the inefficient organization and mechanisms currently in place in Vietnam. In fact, the much-needed revolution in the Vietnamese culture of debate and discourse faces a big obstacle among others: the lack of awareness of the general public about the standards of formal knowledge and scientific evidence, which necessitates an understanding of significance of high-quality scientific research.

To many Vietnamese people, science stays distant from their daily life. First, this is because the practice of science (i.e. investigating matters using the scientific method; looking for evidence in academic literature to back up claims; etc.) is not deeply rooted in Vietnam. This is reflected in the Vietnamese language with more than half of the abstract vocabulary that whose semantic fields concern cognition, social and political relations are Sino-Vietnamese loan words (Alves, 2009). Therefore, scientific-related texts are generally difficult to understand to most Vietnamese audience. Moreover, as a result of a prolonged period of battles and war, the country was isolated and has fallen behind from the rest of the world in terms of information and scientific updates (Nature, 1978). In addition, superstitions and religion practices make up a large account of cultural behaviors of Vietnamese people (Vuong et al., 2018); the direct implication is that laypeople would find religious practitioners more reliable than scientists, while as more subtle cultural undertone, this means that most Vietnamese people prefer to find comfort and reassurance rather than challenge themselves and seek truth. Thus, in order to promote high-quality science in Vietnam, it is important to cultivate a strongly founded research ecosystem that stimulates the conveyance of accurate scientific information to the general public.

The biggest problem when it comes to communicating scientific findings is the gap existing between expert and lay viewpoint. Attempts to reach out to the public of Vietnamese researchers mainly follow the Knowledge Deficit Model (Kearnes, Macnaghten, & Wilsdon, 2006) which emphasizes the provision of accurate, objective and emotionless information to improve understanding. However, research into science communication has pointed out that scientific facts can only be welcomed by the general public if the topics can connect to audiences from a more appealing and laypeople-friendly approach that highlights their significance in everyday matters. One of the attempts to generalize scientific updates to a more human level is "Total SciComm" (Total Science Communication) or all-out science communication which exploits every channel of the media to convey scientific ideas to society. Examples of this include the production of scientific novels, films, videos, games and art works (M.-T. Ho & Ho, 2018). These Total SciComm techniques surely need to be adapted according to the contextual conditions of specific communities. In Vietnam in particular where television ownership and internet users rates are relatively high (Statista, 2019), TV live shows and social networking sites appear to be viral channels to disseminate scientific knowledge. In addition, D. Jones & Anderson Crow (2017) suggested the use of narrative structure by science communicators to effectively present truthful scientific knowledge. The ultimate goal is to help audiences recognize and form personal connections to the academic world, from which to appreciate the role of science in their own daily life.

In this chapter, we have discussed criteria for quality control in research regarding impact factor, the big names, and the global movements that improve the transparency and reliability of science. The question remains: what would be qualified as quality science? At the moment, Web of Science, Scopus and their scores are being used as first-hand measures of the excellence of research. An WoS/Scopus-indexed journal is supposedly better than a non-indexed one, and within the indexed journals, the higher the scores, the better the quality. Then there are the big names in academia, which constitute various characteristics considered as gold standards. However, sole reliance on the name of a journal and its impact factor or CiteScore is not the ultimate way to define the quality of science. Publications in good journals, great journals, even big-name journals, are not exempted from retraction, nor from failing to have the reported results replicated. Thus, the scientific community is pushing towards a new age of transparency with open science. Preregistration, data repository, open access and open peer review all share the same goal: secure the finest quality of scientific research. In Vietnam, WoS/Scopus standards are widely used to set the bar for scientists, and slowly, the standards are becoming the norms. However, in order to foster a vibrant and sustainable academic ecosystem that yields authentically high-quality outputs, measures for quality control must be developed on the basis of good understanding and knowledge of science from all stakeholders, including the general public and policy makers. Effective communication of science is, therefore, fundamental to the future prospect of the Vietnamese science community.

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