

# Chapter 14

## Challenges and Prospects for Taiwan's Higher Education



Jong-Tsun Huang and Yuan-Man Hsu

**Abstract** The present article deals with the growth profile and accompanying problems in Taiwan's higher education over the past two decades. Some thorny issues are identified, such as the continually decreasing fertility rate, the consequent shortage of students for enrollment, and the relatively low average annual expenditure of each tertiary education student by international comparison. Furthermore, Taiwan's higher education community has to compete bitterly for international recognition with very limited funding resources. In response to these challenges, Taiwan's higher education manages to react with some effective measures, such as the balancing between quality research and quality education, the implementation of quality assurance system, the search for effective ways to nurture and recruit young talents and high-profile human capital, and the monitoring of academic progress. Finally, in the prospect of a brighter future, the universities are trying to convince the government to draft an umbrella of policies to help Taiwan's higher education react adequately. The consensus asks for a thoughtful mission setting and international benchmarking from the university and the nation and urges to launch the Higher Education Macro Planning (HEMP) and a road map for the universities.

**Keywords** Taiwan's higher education · Decreasing fertility rate · Balancing between research and education · Quality assurance system · The Higher Education Macro Planning (HEMP)

### 14.1 Introduction

Over the past 20 years, the capacity of Taiwan's higher education has rapidly expanded in the number of both institutions and students. Taiwan's higher education

---

J.-T. Huang (✉)

Graduate Institute of Biomedical Sciences, China Medical University, Taichung, Taiwan

e-mail: [jongtsun@mail.cmu.edu.tw](mailto:jongtsun@mail.cmu.edu.tw)

Y.-M. Hsu

Department of Biological Science and Technology, China Medical University, Taichung, Taiwan

© Springer Nature Singapore Pte Ltd. 2021

A. Y.-C. Hou et al. (eds.), *Higher Education in Taiwan*,

Higher Education in Asia: Quality, Excellence and Governance,

[https://doi.org/10.1007/978-981-15-4554-2\\_14](https://doi.org/10.1007/978-981-15-4554-2_14)

has been further decentralized, which has significantly reduced the degree of state control typical of the 1990s. The present blossoming period of societal and political liberation started following the lifting of martial law in 1987; universities began to seek their autonomy almost in every aspect, including the expansion of tertiary education. We will briefly describe the hard-core challenges, the reaction and coping strategies, and the future prospect.

### ***14.1.1 Problems and Challenges***

There are two distinct features in Taiwan's higher education. The first is its high net enrollment rate, which is over 70% for the age group of 18–21 years old. The number of universities and colleges is around 141, and the size of the student body is roughly 1.2 million relative to a population of 23 million. The second feature concerns the distribution of the annual expenditure on higher education. The total annual expenditure for all-level education has spanned from 5.1 to 5.5% of the gross domestic production (GDP) in recent years. The yearly investment in higher education has held stable at 1.5–2.0% of the GDP over the years, which equally divides for both public and private sectors. The sector of private universities and colleges accounts for a rough estimate of 65% of the total capacity in Taiwan's higher education (MOE, 2019). The problem then lies not in its total amount of expenditure but rather in the distribution of budget allocations. The limited annual investment in higher education is shared by a disproportionately large number of higher education institutions, which inevitably leads to a severe dilution effect.

At first glance, the data profile seems to be fully comparable with the Organization for Economic Cooperation and Development (OECD) average. However, this is not really the case. An increasing number of higher education institutions and corresponding high net enrollment rates were vividly witnessed in a short period of time of about three years after 1998. The number of universities and colleges rose from 67 in 1996 to 141 in 2019. A large-scale educational reform emerged on April 10, 1994 had motivated the trend while igniting an urgent societal demand that intended to popularize and expand the volume of tertiary education. Unfortunately, the year 1998 marked the beginning of a decreasing trend in fertility rates: 1.75 in 1997, 1.55 in 1999, and 1.04 in 2019. Newborns are eligible for college enrollment after 18 years. The net enrollment rate rapidly rose from 35.43% in 1999 to 71% in 2018 due to the combined effect of the increasing number of higher education institutions and the decreasing fertility rate. A shortage of university applicants has been unbiasedly forecasted starting from 2016 by looking back to check the population data. It is predicted that a decline of up to 35% in university student enrollment will go on steadily for at least 12 years. This forecast claims that the number of Taiwan's higher education institutions should be correspondingly reduced by 35% to achieve an equilibrium in the following 12 years.

Alternatively, 50 universities or colleges should be moved out from the original list of 141 institutions. That would surely be a complicated issue for Taiwan society to

resolve. The situation has not improved yet. The World Bank data show that Taiwan's birth rate was the world's third-lowest in 2017 and second-lowest in 2019. However, this is not an isolated case in Asia. For example, similar balancing problems between high net enrollment rates and low fertility rates occurred in Hong Kong, South Korea, Singapore, and Japan. European Union countries also have encountered such difficulties (World Bank, 2019). In response to low fertility rates and the subsequently expected cohort shortage of students, some Asian countries, such as Japan and South Korea, have adopted the strategy to merge their higher education institutions to maintain the required level of university quality. Further critical issues have not arisen merely from the local and national causes; they have emerged from the intense competition on the international higher education platform. We will thus extend this discussion through international comparison to show how Taiwan has reacted over the past two decades. The challenges have been enormous, and the prospect depends on the way we explore and identify the solution in the face of them.

### ***14.1.2 National Indicators of Taiwan's Higher Education***

In 2019, Taiwan's per capita GDP was around \$25,229, and the per capita GDP adjusted by purchasing power parity (PPP) was roughly \$55,244. The International Monetary Fund (IMF) forecast for 2024 is \$33,786 and \$68,209, respectively. Taiwan is predominantly a free-market economy with very few exceptions, such as a strict regulation of the raising of higher education tuition fees. The ratio of tuition fee to per capita GDP is roughly 7% for public schools and 13.7% for private. In terms of comparison, the two ratios are, respectively, 13.6 and 18.52% in Japan, 21.54% and 38.55% in South Korea, and 10.53% for both public and private schools in Australia. The case of Taiwan reflects some kind of state control on educational affairs in an otherwise open society. The public taxation is, as usual, not sufficient to compensate for the difference in these almost fixed low tuition fees. The total taxation accounts for 12.3% GDP, which is significantly lower than 18.3% in Japan, 18.0% in South Korea, and 27.3% in Australia.

The 1.46% GDP tertiary education expenditure in 2015 seems comparable to 1.4% in Japan, 1.8% in South Korea, 2.0% in Australia, and 1.5% for the OECD average. The average annual expenditure of each tertiary education student is a modest \$5,964, with an extraordinary high 71.2% net enrollment rate in 2016. In terms of comparison, the statistics are \$17,883 and 85.4% for Japan, \$9,323 and 73.3% for South Korea, and \$18,337 and 76.6% for Australia (OECD, 2019; MOE, 2019). The relatively low level of annual expenditure in Taiwan partly arises from the lower nominal GDP per capita. However, the annual expenditure of each college student in Taiwan, even after PPP adjustment, still falls behind the above-mentioned countries.

The combination of these alarming statistics indicates that Taiwan's higher education system competes for both limited educational resources in general and a severe dilution of higher education resources in particular. The domestic pressure is further

exacerbated by the intense external pressure of international competition and university rankings. The above-mentioned budgetary and fertility difficulties might only be mitigated by a “less is more” philosophy. The philosophy would entail adopting the market rule to scale down the capacity of tertiary education to a desirable level. The annual support for the universities would thus improve under the current budget constraints. However, the concept of “educational market” is not a popular notion in Taiwan—not to mention its practice. Taiwan is already a market economy, but with an exception in the routine operation of educational affairs and medical care. A socialist philosophy is still prevailing in these two domains. The problem lies in a lack of socialist action to support the necessary educational expenditure through an increase in the national taxation rate to provide internationally comparable subsidies to Taiwanese higher education.

## **14.2 Taiwan’s Higher Education in the Past Two Decades**

### ***14.2.1 Balancing Quality Research and Quality Education***

Over the past two decades, Taiwan has adopted a thoughtful strategy to boost quality research first and quality education next and achieve a balance between the two. The relative projects for research and teaching were subsidized separately in the early 2000s. Quality assurance (QA) practice was then enforced under the requirements of the University Act revised in 2005. Recently, the opening of institutional research (IR) offices and the corresponding establishment of IR warehouses have become a popular practice among universities. The popular and successful implementation of IR in Taiwan might have naturally emerged from a long practice of boost projects and quality assurance routines. The boost projects, QA, and IR are all connected. The following list of events provides a brief history of the higher education boost projects and the related QA and IR implementations:

- (1) In 1999, the Ministry of Education (MOE) launched an “In Pursuit of Academic Excellence” boost project to subsidize the granted university research programs. The National Science Council then created funding for distinguished university research centers. The boosting was executed on a project basis, followed by support for center-based applications. The approach was similar to the 973 projects in China or the Center of Excellence (COE) program in Japan.
- (2) In 2002, MOE took a different approach to identify seven research universities and granted them with university-wide block funding. The program was similar to the identification of excellent universities in the so-called “211” and “985” projects in China and to the European League of 12 (now 23) Research Universities (LERU). In 2003, Shanghai Jiao Tong University released the first World University Ranking Report, also known as the Academic Ranking of World Universities (ARWU).

- (3) In 2004, a big project—"The Promotion of World-class University and Top-notch Research Center"—was planned by MOE and approved by the Cabinet to be included in the national special budget package. In the next year, 12 universities were each awarded a university-wide five-year block funding, with a total of \$1.7 billion. The second five-year project was re-opened for a competition to succeed in the first stage of five-year subsidies. The approach is similar to the support of top universities in China's 985 project and South Korea's BK21.
- (4) In 2005, a university-wide institutional review was conducted for the first time, mainly on the accreditation of university governance and good practice. In the same year, the Teaching Excellence Project was launched to adjust the educational tilt towards research; more than 30 general and comprehensive universities were awarded. Another set of more than 30 technical and professional universities were also subsidized afterward.
- (5) In the years 2006–2009, over 2,445 units of departments and graduate institutes were reviewed and accredited (Wang, 2011).
- (6) In 2016, TAIR (Taiwan Association for Institutional Research) was formed, and the experimental project for promoting the practice of institutional research (IR) was launched. The universities were subsidized for implementing the IR offices to facilitate the practice of evidence-based decisions. The percentage of established IR offices among universities was around 52% before 2018 and has reached over 95% at present.
- (7) In 2018, the Project of Deep Cultivation of Higher Education and Nurturing of the Young Talents (or, Higher Education Sprout Project) replaced the two-stage eleven-year World-class University Project, which was a continuation of the previous support on the search for academic excellence and teaching quality. Its replacement led to focusing on the selection and subsidy of four instead of twelve universities to compete for international recognition. The project has implemented two significant changes: it has enhanced support for the increasing number of research centers, and it has encouraged the practice of university social responsibility (USR) programs to fulfill university obligations.

The chronicled list reveals a few relevant aspects: Taiwan, at first, implemented a project to develop world-class universities, followed by a teaching excellence project to balance the undesirable tilting toward an unhealthy obsession in research. Quality assurance measures were then monitored among universities, mostly in the form of institutional and program reviews. It is now common to consult the IR office before making university decisions or submitting subsidy applications to MOE for approval. The order of the implementations represents a series of connected coping strategies that go from the boosting of research, teaching, and education to the concern for the effectiveness of university governance, thus reflecting the priorities encountered by universities over the past two decades. The first was the intense pressure from international competitions in pursuing research volume and academic recognition. Then, conscious anxiety gradually developed because of a direct and extensive threat from the potential shortage of students enrolling in the following decade. Universities began to bitterly realize that domestic difficulties were going to be greater than

expected. It then became natural to go back to the core values of education—namely, the learning outcome and employability of the students—so that universities could attract a decreasing number of applicants. Universities thus learned how to focus on student learning outcomes and strengthen their governance capabilities; hence, implementing teaching and educational quality and setting up IR offices became the trend.

### ***14.2.2 The Impact of Quality Assurance System on Taiwan's Higher Education***

Even before the volume of higher education began to expand in an unexpectedly rapid way 20 years ago, the increasing demand for keeping a delicate balance between quantity and quality had always been on the core list of government agenda. In addition to encouraging institutions to conduct assessments on their own, the Ministry of Education chartered a few professional associations in the 1980s to assist with academic program-based evaluations and accreditations.

In the 1990s, the government was urged to implement a wide-ranging and more comprehensive system of institutional evaluations. In 1994, a revised version of the University Act stated that the government was entitled and required to conduct institutional accreditation to assure the quality of higher education. The fifth article of the University Act urged the Ministry of Education (MOE) to perform the university assessment and accreditation periodically and to disseminate the evaluation report to the public. The evaluation profiles could thus be utilized as a reference for allocating governmental subsidies and adjustment of specific university quota of student enrollment. The Act was further revised in December 2005. The Ministry of Education was obliged to set up evaluation committees or to support professional accrediting agencies to conduct institutional accreditations periodically. The results could be related to a general policy setting for allocating subsidies to the universities or adjusting the accompanying development plans, although not as specific as previously stated in the 1994 version of the Act. Earlier in the same year, the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) was timely launched to predict the objectives to be met by MOE in the new University Act. However, the HEEACT is not the single certified accreditor in Taiwan (Hou, 2011).

Up to the present, there are a few professional local accreditors in Taiwan, including HEEACT, Taiwan Assessment and Evaluation Association (TWAEA), Taiwan Medical Accreditation Council (TMAC), the Institute of Engineering Education Taiwan (IEET), and the Accreditation of Chinese Collegiate Schools of Business (ACCSB). They are all non-governmental and not-for-profit organizations. TWAEA was founded in 2003 and mainly undertook the program accreditation of Taiwan's professional and technical universities. In the same year, a plan for the set-up of HEEACT was designed and realized in 2005 through a joint effort of the Ministry of Education and the universities. TMAC was the earliest professional accreditor in

Taiwan; it was created in 1999 to assess all the 13 medical schools in Taiwan. TMAC was later restructured to join the HEEACT in 2006; nonetheless, it maintains an independent status for medical accreditation. Founded in 2003, IEET is committed to the accreditation of engineering and technology education programs in Taiwan. ACCSB was developed by the Chinese Management Association (CMA) in 2005 and founded in 2010 to accredit management education and ensure the quality of business education.

As to international accreditors, two well-accepted agencies have successfully conducted program reviews in Taiwan. The Association to Advance Collegiate Schools of Business (AACSB) International is a US accreditor recognized in its first ten-year round by the Council for Higher Education Accreditation (CHEA) and the US Department of Education (USDE). The Council on Education for Public Health Accreditation (CEPH) is a member of the Association of Specialized and Professional Accreditors (ASPA). CEPH has also been officially recognized by Taiwan's Ministry of Education and is welcomed by most Asian universities.

In response to the growing globalization of higher education over the past decade, some Asian countries began to invite international accreditations and certifications, especially from the US, to provide cross-border quality assurance services for domestic universities and local professional accreditation institutions (Ewell, 2008; Hopper, 2007). Some of Taiwan's qualification assurance agencies (QAAs) have also applied for such international certifications. IEET is itself an accredited member of both Washington Accord Signatory and Sydney Accord Signatory, two of the main QAA accords for international engineering alliance. TMAC was certified by the expert panel of the World Federation for Medical Education (WFME) in 2019 to comply with the regulation set by the Educational Commission for Foreign Medical Graduates (ECFMG) in the US, and it will be effective after 2023. The regulation requires professional accreditation from the WFME certified medical school accreditation agencies for other countries outside the US to ensure the acceptance of internship or residency training of foreign medical graduates in the US. In the same vein, HEEACT is currently under review by the International Network for Quality Assurance Agencies in Higher Education (INQAAHE) based on its Guidelines for Good Practices (GGPs).

Taiwan's higher education has significantly learned from the extensive experience of such pluralistic QA enhancement processes. Those who failed the required accreditations may suffer from a sensible loss in subsidies or quota of student enrollment. The exceptional efforts of some average or under-privileged universities have been well recognized through the accreditation process, and it was then to an extent possible to upgrade their reputation to prevent a reduction of student enrollment under the exacerbating pressure of low fertility rate. Finally, the capability of the research-type universities has also unexpectedly benefited from the accreditation process despite the fact that, initially, it was not considered facilitative.

## 14.3 Societal Concerns in Taiwanese Higher Education

### 14.3.1 *Nurturing Young Talents*

For a country like Taiwan, there is no such thing as free lunch. Taiwan is a hazard-prone country due to its island position in the Pacific Ocean and its young and unstable geology. It is a beautiful country yet inflicted with frequent attacks of natural disasters like typhoons and earthquakes and with limited natural resources to supply the societal demands. Therefore, adequate nurturing of young talents has long been considered prioritarian in the list of national development projects so that high-quality human resources can be secured to serve the country. The most recent effort for this purpose was made in the national meeting held by the Cabinet in 2009, followed by supporting meetings and reports held by the Ministry of Education in 2010 and by Academia Sinica in 2011, respectively.

Two essential aspects of the nurturing issue have already been identified. The first is a debate on effective ways to nurture and recruit young talents. Table 14.1 summarizes the three contrasting views on separate demands. Each view is like a spotlight that searches the whole dark land and finds the target cluster that needs to be taken care of. Although the initial debate focused on finding a single cracking-the-code viewpoint to solve the thorny issue as a whole, eventually, the different counterparts agreed that it could only be solved through the integration of a complementary and exhaustive combination of the three contrasting views.

The second aspect is concerned with the enactment of a special law to bypass the accumulated administrative burden of inappropriate regulations and facilitate a creative application of effective policy instruments. The rationale behind the suggested special law is not new as it closely resembles the ones that have been effectively practiced and modified over the past seven decades for the promotion of

**Table 14.1** Three contrasting views for nurturing and recruiting young talents in Taiwan

Viewpoint	Strategies and actions	Counterparts of interest
1. Recruitment of upper 1% from around the world is a must	Attractive incentive packages for recruitment and retainment; Promotion of studying abroad	R&D institutions; International and competitive emphasis
2. Economic and societal development over the past decades were created by the indigenous hard- workings under effective management	Expansion of educational expenditure; Supportive national and educational policies	Educational and industrial sectors; Historical judgement and societal memories
3. The talents are already there. Various active forms of interacting platform need to be implemented	Loosen-up of regulations; On-job and life-long education; Merit-based payoff	Entrepreneurial; Science industry parks; Future-oriented

Source Authors



economic development in Taiwan. Specifically, the Taiwanese government developed a policy umbrella by enacting three successive special laws to provide incentive packages and to exclude the unproductive or inappropriate application of legal regulations. The first special law was enacted in 1960 and was effective until 1990. It included an incentive package for investment in economic development. The second—on industrial development—followed in 1990 to promote the growth of strategic industries, the launch of industrial science parks, and the deployment of major national engineering projects, and it was effective until 2010. A third special law replaced the second one and will remain effective until 2030; it provides incentives for promoting industrial innovation.

Regrettably, further progress has been rather limited. A suggested special law for nurturing and recruiting high-profile human capital is still pending for Congress' approval. Taiwan witnesses a unique combination of a capitalist market economy and a socialist philosophy of education; unfortunately, the Taiwanese society is reluctant to raise the level of tuition fees or taxation rates to cope with the expanding public expenditure in education. An old-fashioned, narrow notion of educational fairness and social justice still prevails in the form of a collective attitude that has been unfriendly to any exception to the rule for quite a long time. As a consequence, those who were educated under this belief consider such exceptions as a severe violation of fairness and justice, which may partly explain why three special laws could successfully be enforced in the promotion of economic development but not on the nurturing of young talents.

Further relevant aspects to the issue of nurturing young talents include the fact that university education should comprise three parts, namely, core competencies, professional expertise, and general education. It is interesting to note that general education is still thought to be one of the most effective tools to cultivate future leadership and cross-boundary creativity. Effective implementation of general education platforms can best facilitate the learning of the dialogue between the humanities and the sciences, unfolding of the future life, thus fostering good citizenship, leadership, entrepreneurship, curiosity, and creativity. Learners can acquire critical thinking skills and wisdom, ways of knowing and doing, and life-long learning attitudes and skills. Successful general education practice could optimally serve both as a first entry into a university and as the initial encounter with the latter's true spirit.

### ***14.3.2 Monitoring the Progress to International Recognition***

As previously mentioned, Shanghai Jiao Tong University released the first ARWU in 2003. The project "The Promotion of World-class University and Top-notch Research Center" was then planned by MOE and approved by the Cabinet of Taiwan as a flagship project to be included in the national special budget package in 2004. The temporal proximity between these two events was accidental. The Taiwanese project was proposed independently before the release of the first world ranking report, but it was expected to help increase the number of the top 500 universities and rank

higher among the top 500 universities. The ratings of Taiwan’s research capacity fluctuated within the range of 17th to 22nd worldwide in the years from 1999 to 2019. The rating methodology of research performance in quality is complicated and different from that in quantity. We will not go into detail for this computation. Figures 14.1 and 14.2 show an approximated comparative status of both the quantity and quality of research articles among different countries over the past two decades.

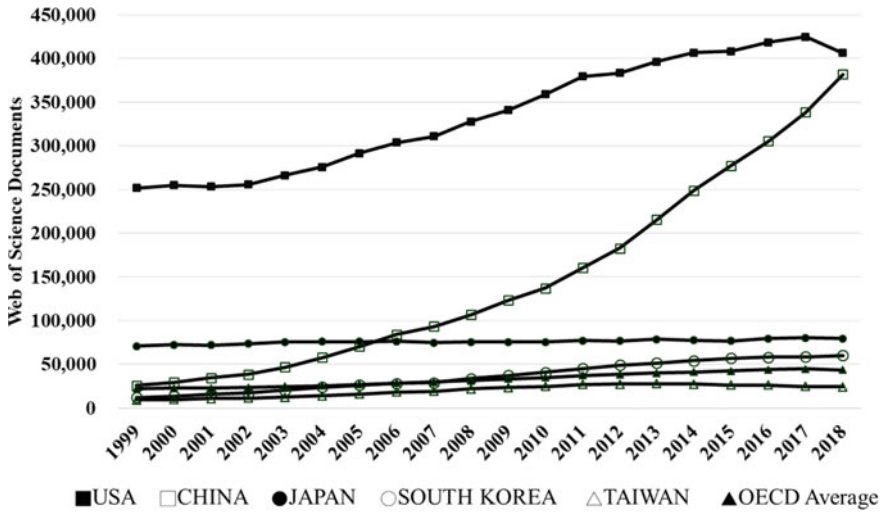


Fig. 14.1 Distribution of article quantity in 1999–2018 (Source Clarivate Analytics, 2020)

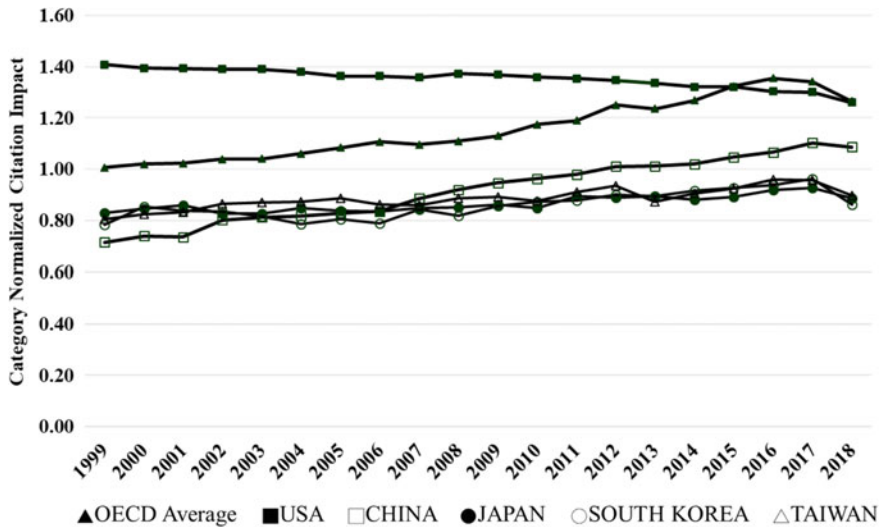
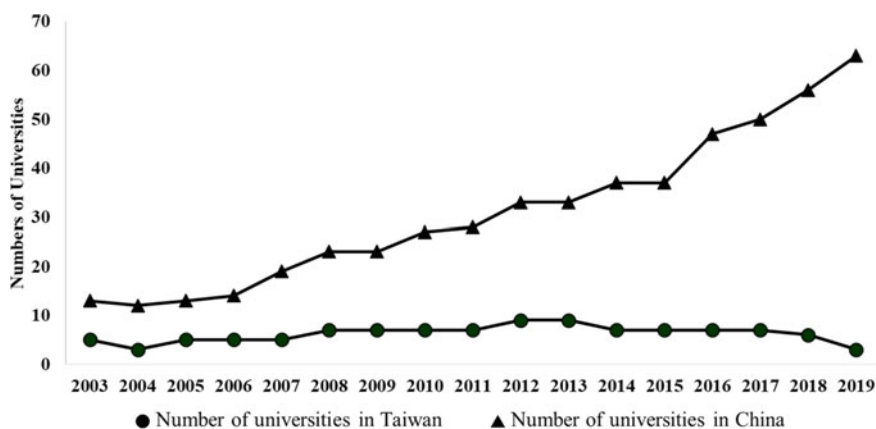


Fig. 14.2 Distribution of article quality in 1999–2018 (Source Clarivate Analytics, 2020)

High societal expectations were understandable, given that the first Shanghai ranking report focused almost entirely on the evaluation of university research performance. Both the government and society indeed consider universities as the primary entities for international research competitiveness. Now that a big project has been granted to the top local universities, it is then legitimate to expect it to pay back with an increased number of top 500 universities in the world.

The world ranking reports of Times Higher Education (THE) and Quacquarelli Symonds (QS), among others, came quickly afterward, each with a different methodology. We will not go into the detailed differentiation of these ranking systems; it suffices to say that both of them and their results are available on the web. It is estimated that ranking systems may exceed an amazing number of 20 to manifest a pluralistic demand for international recognition worldwide. Many countries are troubled in an ambivalent mental state for the world university rankings. The Ministry of Education of Taiwan does not like to be driven into this predicament by watching the yearly rise and fall of the world's top 500 rankings from the different systems. Most of the universities complain that ranking obsession hampers the regular operation of university governance and disturbs the stable growth of educational quality. However, Taiwanese society watches carefully and criticizes severely if the number of top-ranking universities drops. Such difficulties cannot be easily reconciled among different interest groups in Taiwan, and the ambivalence of approach-avoidance conflict still remains.

At first, five universities of Taiwan were listed in the top 500 category. National Taiwan University—the largest comprehensive and research University in Taiwan—was even rated as the best among universities in Chinese societies. The following boost project on world-class universities helped maintain it among the top 500, even if the project was considered modest in terms of subsidies and a five-year lag behind in the intense international competition. Figures 14.3, 14.4, and 14.5 show the rising



**Fig. 14.3** World university top 500 rankings (ARWU) (Source ShanghaiRanking Consultancy, 2020. <http://www.shanghairanking.com/ARWU2019.htm>)

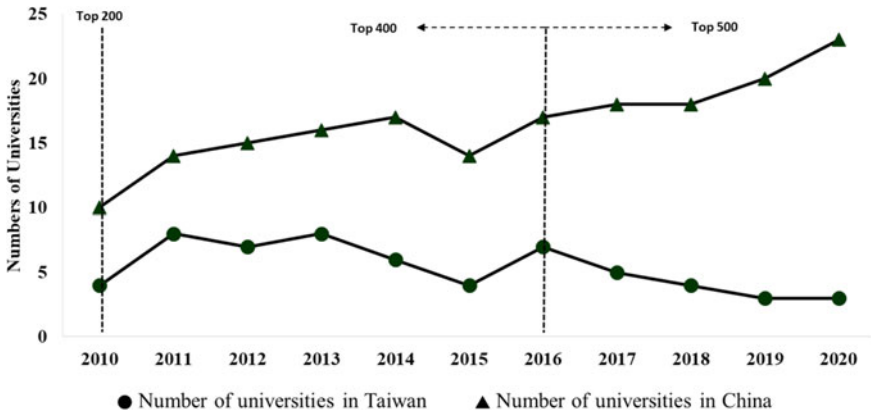


Fig. 14.4 World university top 500 rankings (THE) (Source Times Higher Education, 2020. <https://www.timeshighereducation.com/world-university-rankings>)

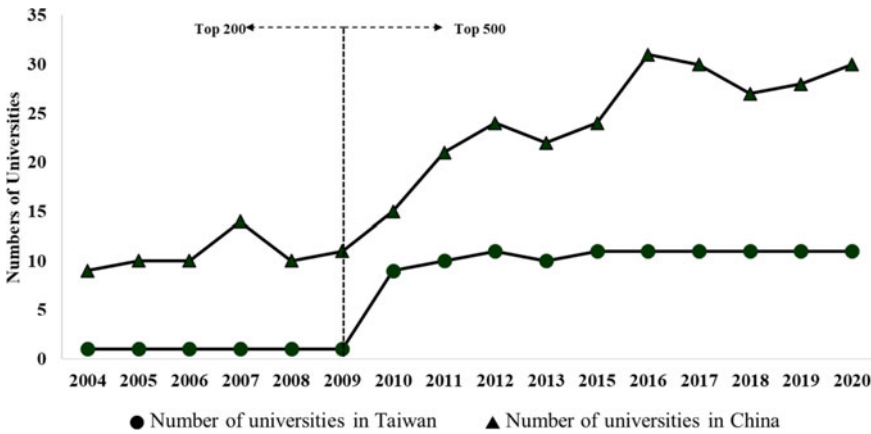


Fig. 14.5 World university top 500 rankings (QS) (Source QS Quacquarelli Symonds, 2020. <https://www.topuniversities.com/qs-world-university-rankings>)

and fall of Taiwan universities within the top 500 list from 2003 until 2020. We took mainland China and Hong Kong together (under the name China) as reference contrast areas to assess this trend. Although the comparison is not appropriate due to the disproportionate difference in scale between the two referents, it cannot escape the attention of Taiwan society. For the Shanghai rating in Fig. 14.3, the number of universities being included on the top 500 list was 5 for Taiwan and 13 for China in 2003, but the difference widened a lot in 16 years: the rating was 3 for Taiwan and 63 for China in 2019.

The changing profile of ranking data cannot be simply attributed to a decline of Taiwan’s higher education; on the contrary, the trend was stable over the years. The

evolving stark contrast could be a consequence of the enormous economic booming in China over the past two decades. A similar argument applies to the unbearable decline of higher education excellence in Germany and Austria and a gradual but significant rise-up in the US after the Second World War. Figures 14.4 and 14.5 show the comparison in different time frames by a different methodology conducted, respectively, by THE and QS. The contrast is still obvious for the same two comparison groups, but the gap is not as widening as the ARWU showed.

It is often difficult to judge if a ranking system is valid in representing a university's credentials and prospects and unfolding all the universities on the ranking scale. The other concern besides the validity issue is consistency across the world university ranking systems. The best "bad" example comes from the drastic ranking changes within the London School of Economics and Political Science (LSE). Shanghai ARWU conducted the first-ever world ranking for LSE in 2003: it was 487th. ARWU revised the ranking criteria by deleting the category of Nature and Science publications for a humanity and social science university like LSE. The 2004 ranking of LSE jumped to 273rd.

In response, a THE supplement (THE1) launched its first world university ranking in 2004 by combining it with an additional worldwide reputation survey on educational and research quality. THE1 then released a ranking of 11th for LSE. Through this operation, a difference was first made with  $487 - 273 = 214$  by ARWU and then with  $273 - 11 = 262$  between two different ranking systems; therefore, the final difference for this double jump was an incredible  $487 - 11 = 476$ . THE1 was later changed to THE2 after 2011. A generic rubric THE is designated to cover both rating systems of THE1 and THE2. See Fig. 14.6 for reference.

To make the comparison more meaningful, we also report the additional ranking data of Imperial College London, University College London, and King's College London for reference. They all belong to the University of London. Ranking profiles are shown to compare 2004 and 2019 data. See Fig. 14.7 for 2004 and Fig. 14.8 for 2019.

By taking LSE ranking as a lesson, we should learn not to judge the university by a single ranking system. It will be a better practice, if necessary, to cross-check between different rating systems so that a more reliable pattern could hopefully emerge.

Overall, the past eleven-year two-stage boost project for Taiwan's higher education, as stated above, has proven helpful in assisting the universities to remain in the status quo, if not to improve. However, the project has been blamed for its selection criteria as they create an unfavorable tilting toward the M-shaped distribution among universities. The project allegedly exacerbates the disparity between general comprehensive and technical universities, between the hard sciences and technology and the humanities and social sciences, and between national and private universities. Like two sides of the same coin, there are advantages for research universities and disadvantages for other universities that were not classified as research-type. It is therefore proposed that research universities be left alone with full support to help compete on the international platform. At the same time, a smaller scale of the special budget should be separately funded to subsidize the disadvantaged parts with different supporting packages so that the disparities can hopefully be corrected. The

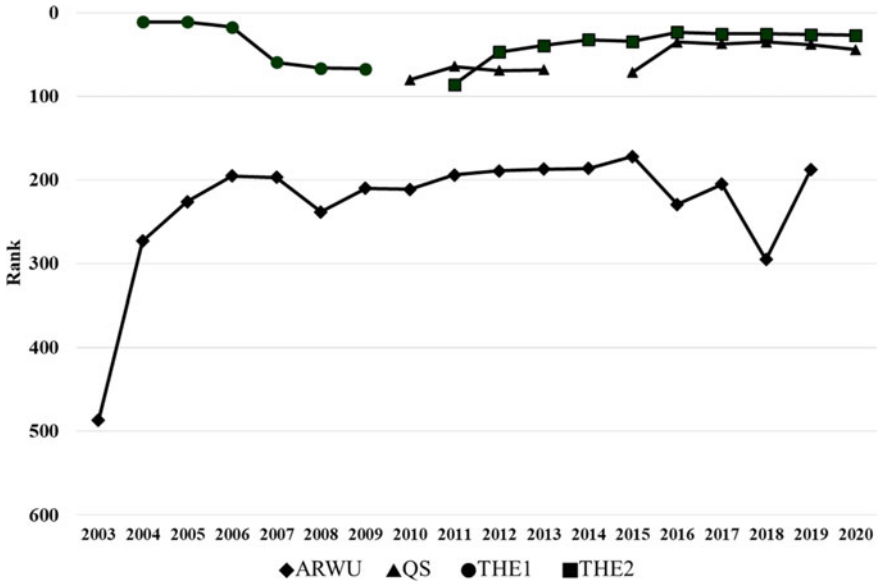


Fig. 14.6 Changing ranking profile of LSE (Source ARWU, QS, and THE)

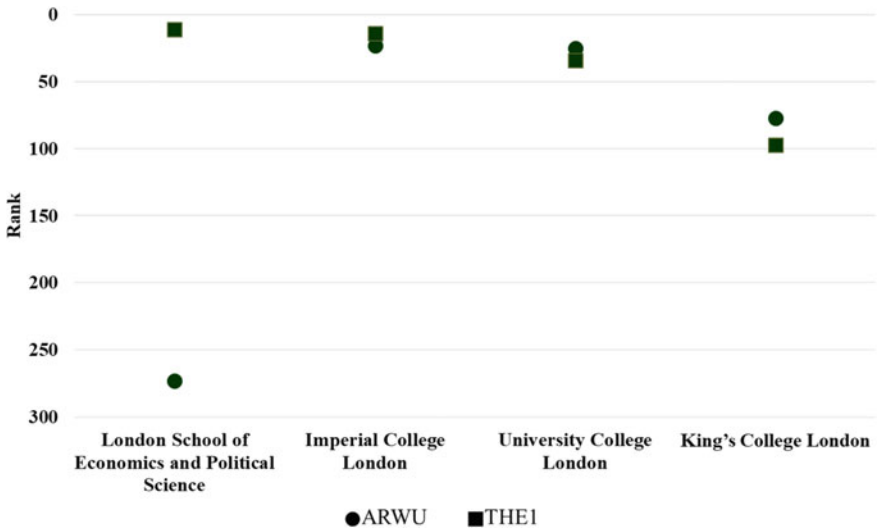


Fig. 14.7 A comparison of the University of London ranking profile in 2004 (Source ARWU and THE)



**Fig. 14.8** A comparison of the University of London ranking profile in 2019 (Source ARWU, QS, and THE)

supporting projects should be designed in different ways to resolve the disparities that would inevitably emerge from the previous single-purpose incentive system. It is a challenging job to achieve balance in taking equivalent care of equally valid purpose, and we are still waiting for the resolution.

### 14.4 Challenges and Prospects

We have identified targeted problems that are still difficult to be tackled within Taiwan’s higher education, such as the ongoing decreasing fertility rate and the consequent shortage of students for enrollment. In addition to this survival issue, Taiwan’s higher education also needs to compete for international recognition. The policy setting and the budget allocation must be carefully designed to cover the issues of striving for current survival and seeking excellence for the future. We also demonstrated how Taiwan has reacted over the past two decades and discussed two major societal concerns in the higher education community. The most important part of the whole issue is how we can find the right way to look at the future to envisage acceptable prospects. We will now briefly discuss the need for a mission setting and international benchmarking for the university and the nation. We will then offer a suggestion on how to prepare a national master plan for higher education and a road map for the universities.

#### ***14.4.1 The Need for Mission Setting and International Benchmarking for the University and the Nation***

In the beginning phase of the world-class university promotion project, the awarded universities—in particular, the “big four” Taiwanese universities—were urged to identify their international benchmarking. For the National Taiwan University (NTU), the first identified benchmark was the University of Melbourne, which then changed to the University of Illinois at Champagne-Urbana (UIUC). At present, NTU takes the University of Kyoto and the University of California at Los Angeles (UCLA) as future benchmarks. For the National Cheng Kung University—the second largest university in Taiwan—the University of Nagoya was chosen as the first benchmark, then moved to the University of Kyoto. For the National Tsinghua University, the first international benchmarking was the University of California at Irvine (UC Irvine), then the University of Kyoto. For the National Chiao Tung University, the choice has not changed over the years: it is Carnegie-Mellon University.

The same logic could also be applied to urge the nation to identify its foreign counterparts as the international benchmarking. The benchmark countries can be identified on a country-to-country matching basis for the purpose of setting an international competition framework in higher education. On the country level, South Korea is the most immediate and strong competitor almost in every respect, and the Netherlands is an excellent comparator with similar land area and population size. Japan could be set as an international marking in the future because of the historically close ties in higher education between the two countries. However, since an international benchmark-setting between the two countries may be very complicated in the matching of cross-national strengths and weaknesses, no such claim has ever been proposed.

The following example of University X is intended to demonstrate how the missioned targets can be worked out through a series of laborious efforts.

#### ***14.4.2 The Missioned Targets of University X***

After a review of the institutional strengths, weaknesses, opportunities, and threats (SWOT), University X began to set a mission of becoming a world-class university in the long run. Before reaching the final destination, the university established a series of adjustments, including an approachable academic ladder to climb. Seven years were estimated to climb up to the top 500 universities. The strategies and action plans were well taken, and the university governance was enhanced by efficient internal control. The PDCA (plan, do, check, and act) process is shown in Fig. 14.9. A single emphasis on research can hardly foster a world-class university, therefore, the additional supporting educational projects were also conducted to enhance teaching quality and the nurturing of talents. A four-year program—“Revisiting Dr. Albert Schweitzer’s Trail”—was launched under the support of MOE’s Teaching Excellence



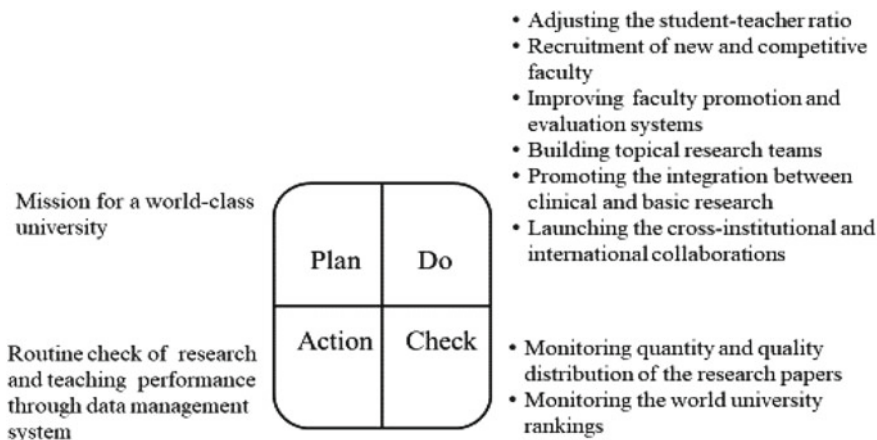


Fig. 14.9 Strategic and action plans adopted by University X (Source Authors)

Project. The program was the first of its kind in Asia to provide an opportunity to learn the life and spirit of Dr. Albert Schweitzer in his life-long commitment in West Africa. Dr. Albert Schweitzer (1875–1965), a 1952 Nobel Peace Prize laureate, was a dedicated theologian and humanitarian physician. He founded and devoted much of his life in the Albert Schweitzer Hospital at Lambaréné in Gabon, West Africa. He has long been remembered in Taiwan’s medical community as a symbolic conscience in the commitment of all his life toward the betterment of all kinds of lives. The students applied and were trained to join the program and learned how to follow the remarkable humanistic trail in all their later and inspired careers. The nurturing process of this kind was valued as an integral part of a world-class university.

The progress was remarkable, as Figs. 14.10 and 14.11 show. Most of the missioned targets were accomplished in 12 years. Such success is not rare. Similar mission-settings can be found in many other cases. In 1996, the University of Maryland formally adopted a plan named “Charting a Path to Excellence: The Strategic Plan for the University of Maryland at College Park.” The plan stated its vision that the University of Maryland at College Park would become one of the nation’s

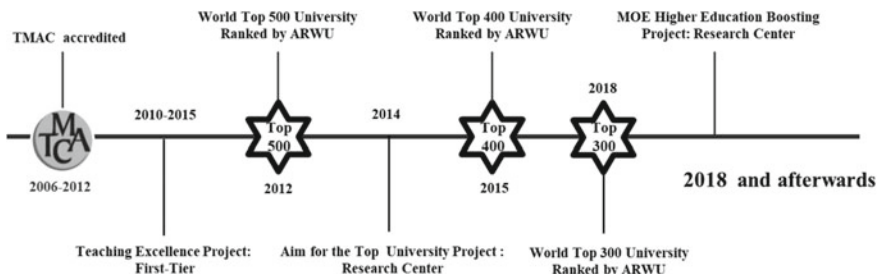
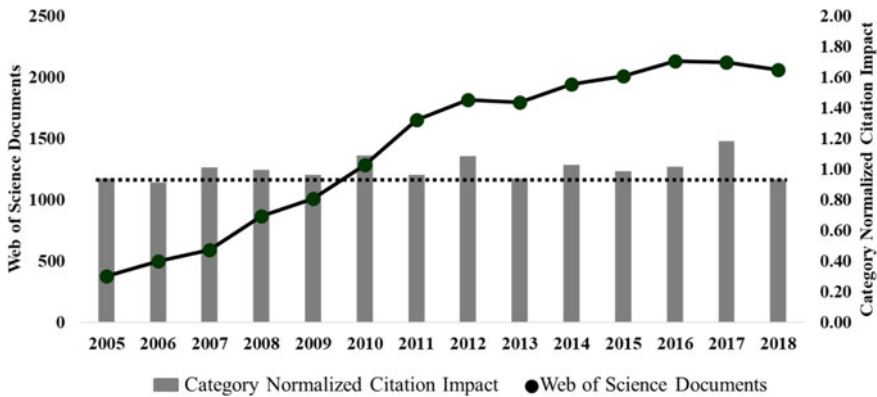


Fig. 14.10 The accomplishment of University X’s mission targets (Source Authors)



**Fig. 14.11** The quantity and quality measures of the articles published by University X in 2005–2018 (Source Authors)

preeminent public research universities—an institution recognized both nationally and internationally for excellence in research and instruction. Ten years passed, and the aim has been achieved. How did an agricultural school rapidly transform into a world-class top-performing research university with an amazing ranking on the top 50? A special issue section and also the cover story of *Deep Impact* appeared on *Science* (October 14, 2005) to recognize a credit sharing by the National Aeronautics and Space Administration (NASA), the NASA Jet Propulsion Laboratory (JPL), and the University of Maryland at College Park before the University’s 150th anniversary. The world was watching while the Flyby spacecraft released the Impactor to bombard the comet Tempel1 deeply on July 4, 2005. The Deep Impact Project was not only a ring of fire in the space but also a world event on the earth. Many observatories around the world and in space observed this unprecedented collision of Deep Impact with comet Tempel1.

By taking the University of Maryland at College Park as a successful predecessor, University X, after twelve years of hard work, demonstrated that ten years could also be a manageable number for Taiwan universities.

### ***14.4.3 Launching the Higher Education Macro Planning (HEMP) and a Road Map for Universities***

The success of the research-type universities does not represent the whole prospect of Taiwan’s higher education. The successful experience of a single boost project or a small cluster of outstanding universities must be extended to solve the thorny issues in the whole spectrum, which means that a successful umbrella of policies has to be designed and put into action. More aggressive national educational and nurturing

plans should be launched, like the National Competition Policy in Australia (1995) and the American Competitiveness Initiative in the US (2006).

Taiwan will call a “National Meeting for the Promotion of Science and Technology” in 2020. This grand event is held every four years, we may take this opportunity to examine whether the expenditure of national research and development (R&D) will have reached the promised level (>3% GDP) and to see if the ratio of the basic science budget to the total R&D expenditure will have exceeded 15%. We could also examine if the development of the humanities and social sciences will have been effectively incorporated into the process of promoting national science and technology. These three major indicators have been urged to be accomplished by the Cabinet, as stated in the “Fundamental Act for Science and Technology” in 1999 (ROC Government, 1999). The accomplishment of these three indicators will greatly facilitate Taiwan's higher education.

For a small but competitive country like Taiwan, the universities as a whole could serve the country as a strong backbone in both academic and industrial developments. For this reason, universities are trying to convince the Cabinet that a “Higher Education Macro Planning (HEMP)” and a “Road Map for the Universities” should be drafted timely. It is not only an echo to the coming “National Meeting for the Promotion of Science and Technology,” but also an update to remind the country of an inescapable international competition. In the face of pressure, we need courage. Ernest Hemingway once said, “courage is grace under pressure”; we need the courage to change so that grace will still remain even under intense pressure.

**Acknowledgements** We thank Drs. Chun-Chi Chih, Hua-Chi Chou, and I-Jung Grace Lu from Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) for providing valuable educational and statistical data.

## References

- Australia Government. (1995). *The National Competition Policy of Australia*.
- Clarivate Analytics. (2020). *Clarivate analytics incites*. Philadelphia, PA: Clarivate Analytics.
- Ewell, P. (2008). *U.S. accreditation and the future of quality assurance*. Washington, DC: Council for Higher Education Accreditation.
- Hopper, R. R. (2007). Building capacity in quality assurance the challenge of context. In S. Vincent-Lancrin (Ed.), *Cross-border tertiary education* (pp. 109–157). New York, NY: OECD/The World Bank.
- Hou, A. Y. C. (2011). Quality assurance at a distance: International accreditation in Taiwan higher education. *Higher Education*, 61(2), 179–191.
- MOE (Ministry of Education). (2019). *Education statistics of the Republic of China*. Taipei: Ministry of Education. <https://stats.moe.gov.tw/files/analysis>.
- OECD. (2019). *Education at a glance 2019: OECD indicators*. Paris: OECD Publishing.
- QS Quacquarelli Symonds. (2020). *QS world university rankings*. London: QS Quacquarelli Symonds. <https://www.topuniversities.com/qs-world-university-rankings>.
- ROC Government. (1999). *Fundamental Act for Science and Technology*.

- ShanghaiRanking Consultancy. (2020). *Academic ranking of world universities*. Shanghai: ShanghaiRanking Consultancy. <http://www.shanghairanking.com/ARWU2019.htm>.
- THE (Times Higher Education). (2020). *Times higher education world university rankings*. London: Times Higher Education. <https://www.timeshighereducation.com/world-university-rankings>.
- U.S. Government. (2006). The American Competitiveness Initiative of US.
- Wang, B. J. (2011). The meta-evaluation of the first cycle of program accreditation results: The content analysis if the accreditation reports. *Evaluation Bimonthly*, 29, 9–14. <http://epaper.heeact.edu.tw/archive/2011/01/01/3905.aspx>.
- World Bank. (2019). *World development indicators*. Washington, DC: World Bank.

**Jong-Tsun Huang** is now President of Examination Yuan of ROC, Professor in China Medical University (CMU), and Professor Emeritus in National Taiwan University. He was a visiting scholar at Harvard University, Carnegie-Mellon University, St. Louis University, and UCLA. He has served as President of Taiwan Psychological Association, Director General at the Division of Humanities and Social Sciences in National Science Council, Minister without Portfolio and the Executive Director for the Commission for 921 Earthquake Post-Disaster Recovery, Minister of the Ministry of Education, President of CMU, and President of Higher Education Evaluation & Accreditation Council of Taiwan (HEEACT).

**Yuan-Man Hsu** Professor of the Department of Biological Science and Technology at China Medical University (CMU), Taiwan.