

Globalization and Academic Work in Singapore

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Introduction

Ishikawa (2009: 2-3) observed that “in June 2006, Osaka University received an e-mail message requesting data for the Times Higher Supplement University Ranking...after receiving the first survey in 2006, we as a university started paying more attention to... the ranking exercise”. This rather innocent request for information represents an important shift in East Asian higher education, specifically, an increasing trend by its national universities or what Yonezawa (2007) calls the flagship universities, to pay increasing attention to rankings in the wake of globalization¹ since this critical feature influences inter-university competition for resources, faculty, and students. In the process, such universities have restructured their organizations and reshaped academic work.

Singapore’s own journey into the higher education restructuring process took a decisive step in 2005 with the corporatization of its three universities, the National University of Singapore (NUS), Nanyang Technological University (NTU) and Singapore Management University (SMU)². Since it has been about ten years since the corporatization, this paper provides an assessment of the

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¹ Globalization and its impact on higher education takes many forms. For example, the rapid circulation of ideas and the valuation of international over national publications, the increasing movement of faculty and students.

² <http://www.moe.gov.sg/media/press/2005/pr20050412.htm>

progress of this venture, and examines, through a survey, the perceptions of professors from NUS and NTU with regard to their work and their university.

In its final report, the University Autonomy, Governance and Funding (UAGF) Steering Committee indicated that these three institutions “will require more autonomy so that they can better respond to opportunities and challenges they face, and better hold their own against universities overseas” (2005: 1). This rationale thus clearly places the restructuring as a response to globalization and the increasing inter-university competition from abroad. This report also indicated that with the provision of the one-line block budget to the universities, they maintain a set of targets which were derived from the idea of performance contracts from Denmark, Finland and Switzerland (2005: 29).

The Ministry of Education gives greater autonomy to the universities in exchange for two types of agreement. The first is a policy agreement (UAGF, 2005: 31) where the universities agree to maintain:

- (a) Quality undergraduate teaching, a reaffirmation of the role of especially NUS and NTU role as Singapore’s national universities;
- (b) Strengthen research, where a reference is made to Singapore’s research capacity and wealth. This suggests the connection between the universities research output and their links to the Singapore economy; and
- (c) Achieve “international branding and excellence in both teaching and research, with professional and motivated faculty and staff”. This third strategic objective recognizes the need for the universities to make an international impact and makes the university senior management more sensitive to university rankings as an indicator to mark the standing of their universities.

The second element is a performance agreement which specifies key performance indicators with regard to teaching, research, and service contributions to society, along with necessary organizational changes (UAGF, 2005: 33-34).

The transformation of NUS and NTU from national comprehensive universities to incorporate stronger research functions was boosted with the National Research Foundation (NRF), which created significant funds for strategic research in line with the research goals. For example, five research centers of excellence were created. NUS created the Cancer Research Institute, the Center for Quantum Technologies, and Mechanobiology Institute. NTU had

the Earth Observatory and the Center on Environmental Life Sciences Engineering (also affiliated with NUS).

The corporatization of Singapore universities in 2005 is critically linked to a change in university human resource practices, specifically to movement of the salary structure away from the civil service pay scale. The necessity of this move was described by the NUS President Tan: “we need to take into account the fact that manpower costs comprises about 70 per cent of our operating cost and the university has to pay international competitive salaries to retain and recruit quality academic staff” (Today, 2006). This change also signified Singapore’s ambitions for its universities, as the Singapore Prime Minister Lee’s remark quite dramatically shows: “universities are in an intense contest to attract the best and brightest. Such competition, moreover, is not just local or regional. It is global, and fiercely so... The best universities trawl for the best faculty, students, researchers” (Straits Times, 2005).

It has been approximately ten years since these new changes were incorporated into Singapore universities. How has the work of professors in these universities changed? A systematic review of academic work from a survey of 169 academics from NUS and NTU is presented below. This is part of a larger project titled “The Changing Academic Profession in Asia” led by Hiroshima University’s Research Institute for Higher Education³.

A systematic sampling method was used, and the NTU and NUS team of survey assistants contacted professors from a master list or population sampling frame compiled from web information. The two teams of survey assistants at NUS and NTU contacted the academic personally to arrange for a drop off and pick up of the questionnaire. The survey was conducted during the teaching weeks over a period of three semesters in order to maximize efforts to reach the busy academics.

NUS professors formed 60% of the sample while NTU professors comprised the other 40%. The humanities and social science disciplines (including business and education) were 41.6% of the sample while Science, Technology, Engineering and Medicine (STEM) disciplines constituted the other 58.4%. The sample had more males (79%) than females (21%). Significantly, non-local born professors made up 56.7% of the sample making Singapore universities quite different from its Asian counterparts.

³ The Singapore project was generously funded by a Ministry of Education Tier 1 grant titled “The Changing Academic Profession in Asia: Singapore” (R-111-000-118-112).

Creating the global university centered in Asia

Shifts in the work of the academic profession in Asia

It is important to note that even as the universities in Singapore restructured to accommodate their new role as international research universities, this new function was grafted atop their traditional teaching roles as national universities serving to educate the elite of the nation.

Figure 1 depicts the manner in which NUS and NTU professors manage the teaching and research expectations of their universities. During the term professors average about 18.2 hours a week teaching. This figure includes not only lectures and tutorials, but also preparation time, student consultations and grading. In addition to teaching activities, professors devote about 18.5 hours to research and writing. When the university term ends, teaching drops to 8.8 hours – mainly graduate student supervisory activities with some residual undergraduate student teaching like summer school. It is during this period that research activities increase with professors spending 27.5 hours per week. Figure 1 also indicates that all the other activities with which professors are associated – service, administrative duties and other activities – are fairly stable throughout the year.

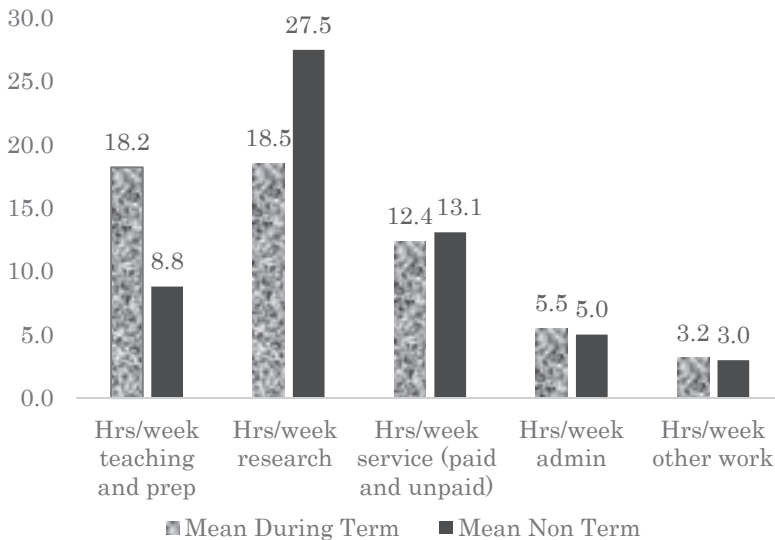
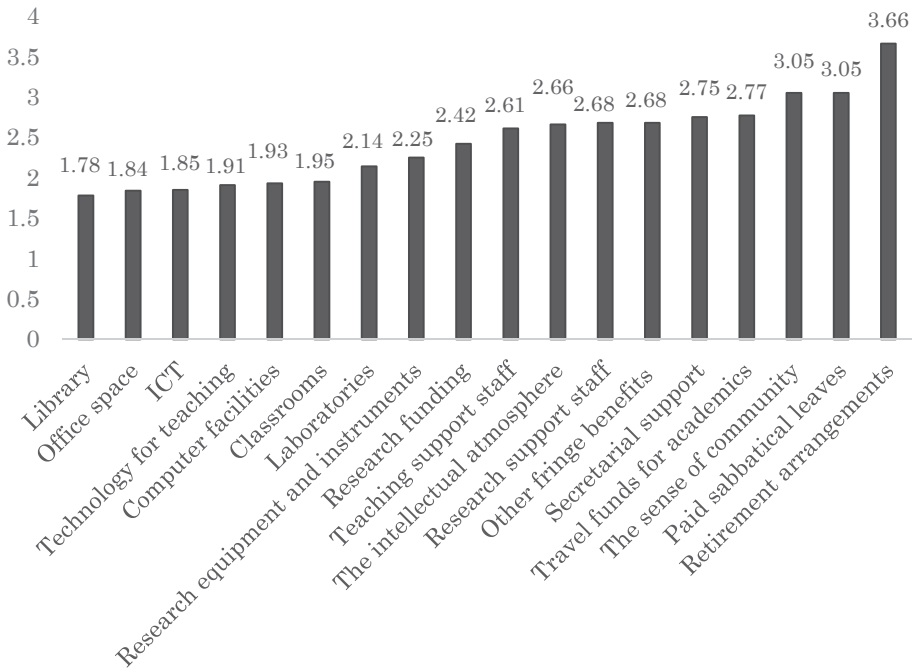


Figure 1. Academic distribution of labor during term and non-term weeks (hours per week)

Associated changes in the campus environment

The government commitment to restructuring Singapore universities into international institutions with strong teaching and research capacities involved a series of broad-based campus changes; including investments in university teaching and research facilities; associated support personnel; financial support for research activities; and more intangible changes in the university environment.

Figure 2 provides a sense of how professors feel about such changes. The figure displays eighteen elements arrayed from left to right on the basis of high mean scores approximating one (1) for excellent and five (5) for poor. Both universities have done very well on campus facilities and amenities, with its libraries receiving the best score of 1.78. Other well-evaluated facilities include office space (1.84); information and communications technologies [ICT] (1.85); teaching technologies (1.91); computer facilities (1.93); and classrooms (1.95); laboratories (2.14); and research equipment (2.25). Other well-evaluated facilities include office space (1.84); information and communications technologies [ICT] (1.85); teaching technologies (1.91); computer facilities (1.93); and classrooms (1.95); laboratories (2.14); and research equipment (2.25).



Note: 1=Excellent, 5=Poor

Figure 2. Evaluation of university facilities, personnel support, policies and university environment (mean score)

The next set of features received a middling score between good (2) and average (score of 3). Three of the six elements within this range involve support staff: teaching staff (2.61); research staff (2.68); and secretarial support (2.75). Part of the reason for a lower score for support staff is the difficulty of obtaining adequate numbers of teaching and research support personnel, since there are fewer universities in Singapore and a smaller support pool. Academics in Singapore did not think that their travel funds were good but perhaps not generous enough (2.77). This may be due to the clear guideline restricting travel support for research and the presentation of conference papers, but not for other academic activities like attending journal board meetings or chairing conference panels, and the hosting of university funded workshops outside of Singapore.

The last set comprises features which professors rate average (3) to poor (4). Singapore universities provide tenured academic staff a stipend for overseas sabbaticals. However, many feel that the financial support for an extended stay abroad is insufficient, thereby accounting for a poorer score of 3.05⁴. Of the eighteen items, retirement benefits received the poorest score of 3.66. This rather odd feature was discussed with Japanese and Taiwanese team members⁵ and both indicated that their universities have several features that allow their retired professors to have adjunct appointments where they can participate in both research and teaching. In fact, one Japanese colleague in this team is a retired professor with an adjunct appointment. It seems that the dominant peer governance system, and also the Confucian system in Taiwan also translates into respect for senior colleagues which extends beyond their retirement. By contrast, the Singapore system is perhaps dominated by a more merit-based system which only extends the contract of top performing professors their retirement age of sixty-five, and a more bureaucratic system where links to professors are severely weakened once they retire.

“The sense of community” is the third element which received a lower score of 3.05. The overriding goal of Singapore university restructuring was to allow them to respond effectively to external competitive pressures. The UAGF steering committee argued that “for excellence to be achieved, the university community will need to accept that funding and other resources cannot be

⁴ It should be noted that non Singapore universities may not give sabbaticals and those that do may expect the faculty to find their own source of financial support.

⁵ I am grateful for the discussion with Professor Tsukasa Daizen of Hiroshima University and Professor Robin Chen of National Chengchi University.

distributed in an egalitarian fashion across the entire faculty as there will be an inevitable dilution effect” (2005: 26). It seems that while the operation of this merit-based principle has allowed the Singaporean universities to achieve the desired peaks of excellence, it has diluted the sense of community.

The significantly lower evaluations professors give to retirement benefits and the sense of community may in turn reflect the direction of universities’ human resource provisions that seem to focus upon performance-based payments to the neglect of professors’ well-being.

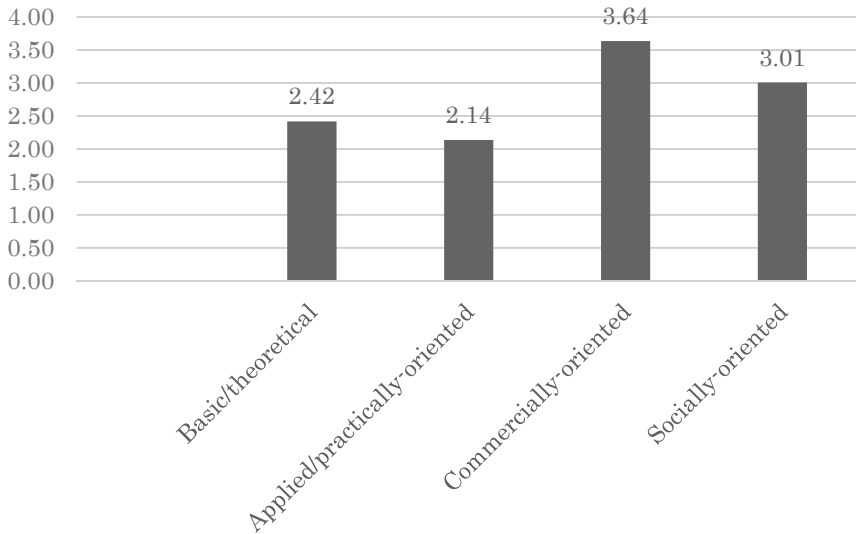
Research orientation

In the study, a distinction was made between four different types of research. Applied research is designed to solve practical and everyday types of issues and which also provide evidence for government policies. Basic research is conceptual or theoretical in nature. Commercial research was defined as having the potential for commercial applications. And lastly, socially-oriented research was defined as activities which lead directly to the betterment of society.

Singaporean universities are transforming themselves into internationally-recognized ones. A central element of their policy agreements with the Singapore Ministry of Education is “to excel in research and be an engine of new knowledge” (UAGF, 2005: 31). The performance agreements between the universities and the Ministry of Education specify targets on research outcomes and training of graduate students (UAGF, 2005: 33). Such a clear research mission has a direct impact on the work of the academic profession. As indicated by the means for all four types of research presented in Figure 3, the main foci of Singapore-based academics are in basic (2.42) and applied research (2.14). Dr Tony Tan, who in his capacity as chair of The International Academic Advisory Panel (IAAP),⁶ observed in a 2007 interview that “the Singapore economy is now being transformed into a more innovative, R&D-driven knowledge economy. We have to build on the foundation of competitiveness, which is efficiency and reliability, but you need to add to it a more entrepreneurial spirit, more proprietary knowledge” (Straits Times, 2007). Certainly, the focus of professors in applied research is a step in this direction, but this orientation has to be matched by commercially oriented research for the STEM professors. From the survey, science professors registered a mean of

⁶ The IAAP was established in 1997 to provide guidance to Singapore universities on research and education.

3.13, engineering professors a mean of 2.93 and health/medical sciences 3.44 for commercially-oriented research.



Note: 1=very much, 5=not at all

Figure 3. Type of primary research conducted (mean score)

Another significant point that can be seen in Figure 3 is the mean of 3.01 for socially oriented research which has a direct link to the betterment of society. It is clear from the government’s research emphasis that research which is internationally recognized and commercially valuable is a goal which Singapore-based professors have strived to follow. And the UAGF steering committee (page 26) had laid the research meritocracy cornerstone to distribute more resources to top-performing researchers who have gained international prominence. Within this research climate, have Singapore-based professors shied away from socially-oriented research, which given its highly localized context, is unable to make international impacts? The survey indicated that business professors tend to prioritize this type of research (2.29), followed by social science professors (2.32) and health/medicine professors (2.89). Engineering professors and science professors lag behind with means of 3.2 and 3.91 respectively.

Thus, aside from basic and applied research which all professors do as primary research, there seems to be a division of labor with science and

engineering professors focusing more on commercially-oriented research and the business, social science, and health/medical sciences professors participating in socially-oriented research. With Singapore's national research foundation devoting attention to commercial research through the creation of a S\$50 million technopreneurship fund to link research ideas to businesses (Singapore Government News, 2010) and a corporate laboratory scheme to link university researchers to foreign and local companies (Singapore Government News, 2013), a marked shift in this type of research for physical science and especially engineering university researchers is likely to be seen.

Evaluation of academic work

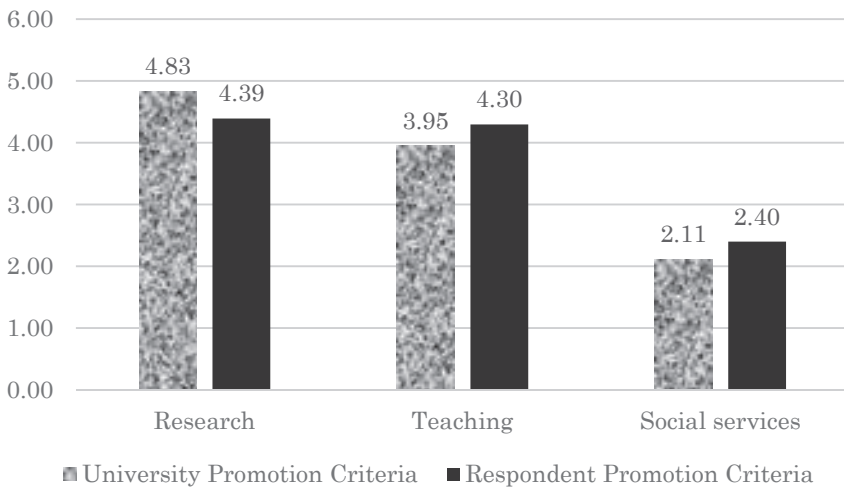
Figure 4 examines NUS and NTU professors' views of the emphasis their universities place on research, teaching, and social services versus what their personal evaluation of how important these indicators are for promotion. With research as a key contribution which professors can make to the international profile of their university, it is no wonder that those surveyed think that their university values research highly as a criterion for promotion (mean of 4.83, almost a 5 which indicates strongly emphasized). It is interesting to note that they themselves emphasize research lower as a promotion criterion (4.39), than teaching (4.30) and social service (2.40). Indeed, teaching and research form the twin pillars of the work of the academic profession valued by universities. Teaching continues to be a valued objective for NUS and NTU as national universities. The policy agreement between the universities and the Ministry of Education specifies "providing quality education to our undergraduates to support our economic growth" (page 31), clearly invoking a human capital argument to Singapore's economic growth. Research, as suggested earlier, is of strategic importance in raising the university's international profile and also as creative knowledge and innovative technology in the Singaporean economy.

Perhaps what has been left by the wayside is socially-beneficial research which is a form of societal service. Although professors value it significantly more than what they perceive the university values social service as a promotional criteria, the mean values are much lower than those of research and teaching. Those that perform social services do so out of a commitment rather than guided by their university's research norms. Mok (2011: 212) has commented on this tendency.

Under the pressure to publish in internationally recognized

venues such as SCI and SSCI journal articles, many academics in Asia now pay no attention to the university’s public functions. Believing that it is important to be published only in internationally leading journals or by major university presses in the United States and the United Kingdom, academics in Asia are becoming less interested in domestic affairs and social issues (also quoted in Loh, 2013: 11).

If this is indeed the trend, then the university’s role through the activities of its professors as the voice and conscience of society is compromised.



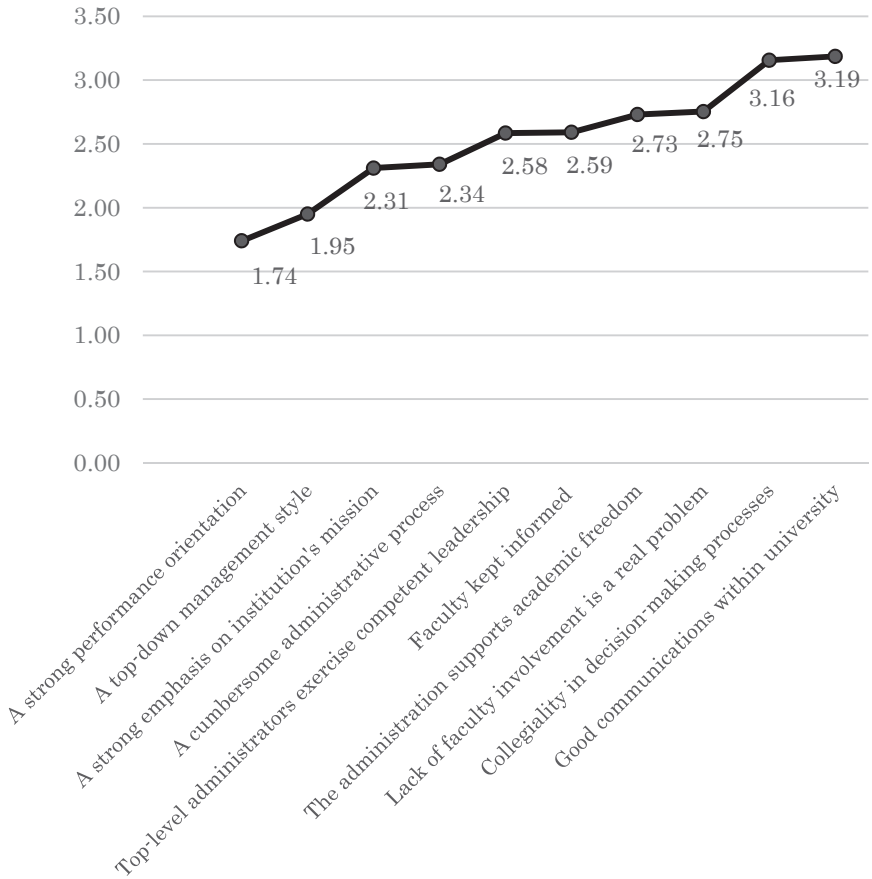
Note: paired sample T-test indicates significance ($p < 0.01$) for research, teaching and social services.

Figure 4. Perception of university criteria for promotion versus personal criteria (mean score)

Perception of the university management system

Annex D of the UAGF report also stated that the resource persons⁷ “agreed that strong leadership was the key for autonomous universities to be successful. Therefore, it was important that autonomy, and the responsibility that came along with it, be felt at every level of leadership, from the Council members, President, senior management down to the deans and department heads” (UAGF, 2005: 81).

⁷ The four resource persons listed on page 78 represent senior management from NUS and NTU.



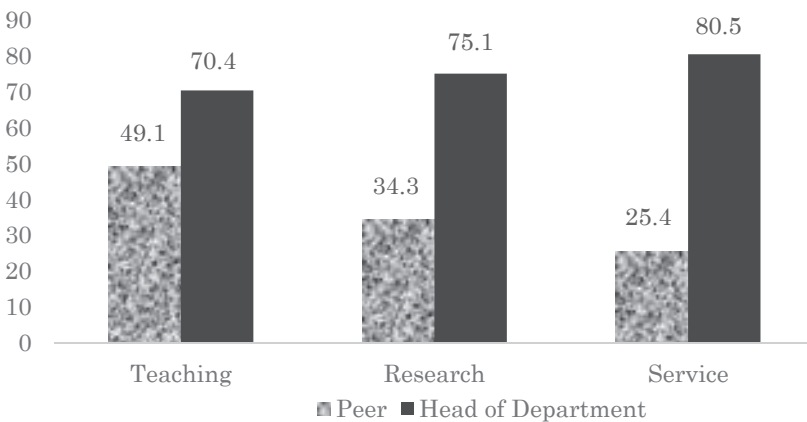
Note: 1= strongly agree, 5=strongly disagree.

Figure 5. Perception of university management system (mean score)

In the ten years since corporatization, professors from both NUS and NTU see a “top down leadership management style” (mean 1.95) that has a “strong emphasis on the institution’s mission” (mean 2.31) and a “strong performance orientation” (mean 1.74). These are the three management indicators on which the professors have consistently strong agreement (Figure 5). The data presented in Figure 5 is also clear that professors consistently disagree that there is “good communication between management and academics” (mean 3.19), and

that there is “collegiality in decision-making processes” (mean 3.16). To a lesser but significant extent, professors also feel the lack of faculty involvement to be an issue (mean 2.75). A “cumbersome administrative process” (mean 2.34) also registered some agreement, completing the problems of a top down management style.

Thus, as can be seen the opposite ends of the indicators in Figure 5, these are the strengths and weaknesses of a top down management style where effective leadership has allowed the university to steer decisively towards its desired objectives spelt out in the UAGF report, but in the process, Singaporean universities have suffered from collegiality and communications between management and academics; poorer faculty involvement; and a cumbersome, overly bureaucratic administrative process. In the section on internal governance, the UGAF has argued for “a balance between top-down directives and bottom-up initiatives (page 25). The survey data has shown that the weightage has shifted in favor of top-down directives.



Note: this is a multi-response question and the percentages do not add up to 100%.

Figure 6. Person(s) doing the regular evaluation of professors (percent)

Further evidence of the top-down management style can be seen in Figure 6. In teaching, research, and service, it is clear that the department head is the person doing the evaluation rather than peers, which is a more central feature of a peer governance system. Peers only play a more significant role in teaching evaluation since this is built into the system. And even this form of evaluation works as a feedback or input for the Heads’ assessment. Thus, department

heads represent the frontline command within this hierarchical system, where the chain of command connects them to the dean and to senior management.

Discussion and conclusion

The National Research Foundation and its shaping of research work in Singapore

A year after the corporatization of Singapore universities, the National Research Foundation, was created in 2006 with a significant budget of Singapore \$5 billion dollars⁸ in order to shape the research landscape of Singapore and in the hiring process of junior faculty and the research work of professors. A news article (Straits Times, 2009, January) indicated where the funds were expended:

- (a) The campus for research excellence and technology enterprise (CREATE) cost S\$1.36 billion for the physical structure and the research centers. CREATE houses some 1200 researchers and is home to technology incubators and startups⁹.
- (b) Targeted research areas which are strategic to Singapore (clean water technologies, clean energy technologies, interactive and digital media research, and biomedical research) and its economy received \$1.05 billion. The senior management of Singapore universities understand these strategic research areas and respond according. When NTU received news that it has emerged as the top Asian university in producing impactful research, the chairman of the board of trustees Koh Boon Hwee remarked: “research is expensive, so you just can’t shoot in the dark. You have to carefully pick some areas you excel in and go all out” and Mr Koh went on to mention several NTU impactful research domains which matched the government targeted areas such as water, energy’ and new media (ANN Asia News Network, 2014).
- (c) The research centers of excellence mentioned earlier in the paper were allocated S\$750 million. By 2009, four of the five RCEs have been established, training 580 PhD students and post-doctoral fellows (Straits Times, 2009, May).

⁸ At Singapore S\$1 to United States \$0.7422 dollars, this will be about US\$3.71 billion dollars as of June 2015.

⁹ Retrieved from <http://utown.nus.edu.sg/about-university-town/create-2/>

- (d) The National Framework for Innovation and Entrepreneurship received S\$360 million. S\$50 million is allocated per year for five years for university researchers turning to technopreneurs by starting their own companies (Straits Times, 2009, May). As suggested earlier, the presence of such incentives will move the work of academics towards commercialized research, especially those in engineering (Figure 3).
- (e) NRF Research Fellowship was allocated S\$160 million. Started in 2007, this scheme is to attract overseas young bright scientists to begin their research careers in Singapore. Each recipient receives up to S\$3 million in funding support over five years (Channel NewsAsia, 2012). This initiative, along with CREATE and the RCEs, will attract a growing pool of young researchers in targeted research areas. Singapore and its universities hope this pool of young talent will strengthen Singapore's research competitiveness in various niche areas.

Maintaining research competitiveness and teaching quality

The corporatization of NUS and NTU added research on top of their teaching responsibilities as national universities. With research as the new top priority, professors maintain their research priorities amidst a significant teaching schedule when the term is in session and increase research during the non-teaching months (Figure 1). The teaching responsibility is somewhat eased by good teaching technologies and facilities (Figure 2). The mean of 2.61 for teaching support staff could be better if there were a larger pool of graduate students, part-time teachers, and post-doctoral fellows from which to source. Figure 2 shows that professors rate research equipment and funding better than research support staff. Again, the smaller pool of research assistants, post-doctoral fellows may be the chief reason. University teaching and research support staff represent a special category of labor which is highly educated and yet is not compensated fully for the years of their training. Their incentive for taking such support employment is often tied to their perception of the perceived benefits of further training and education. Such is the motivation of graduate students and post-doctoral fellows. While the universities in Singapore have responded to the shortfall in teaching by creating a teaching track for academics where the teaching load is significantly higher in return for low expectations for research output, the case for research support staff is less clear. Taken together, the smaller pool of support research manpower stems from Singapore's obvious constraint as a small country with fewer universities from which to draw

graduate students and post-doctoral fellows. Funding from the National Research Foundation has certainly created a significant young talent pool for STEM disciplines, but the situation for social sciences and business is less certain.

Maintaining research competitiveness of universities will require its professors to do basic, applied, and commercial research which will yield the citations or the commercial spinoffs that go into the definition of impactful research. In the process, social research which benefits society is sacrificed. Calhoun (2007) highlights a tendency for academic projects to turn away from pressing public agendas and argues that better social science is also one which addresses the problems of society. His remarks for social science may well apply to STEM disciplines.

Management style cannot fit all objectives

Moving to a corporatized system in 2005 has made the universities autonomous in terms of their own control over much of their key functions. However, this move has not made Singapore universities more democratic in terms of their governance structure. The UAGF report (2005: 47) had wished that “along with the greater flexibility over funds usage, the university Council and leadership (from President to the Deans) will need to shoulder greater responsibility to ensure the most effective use of its limited resources”. This university leadership has certainly embraced. In fact, the rapid strides that NUS and NTU have made in achieving its international research profile has been the result of a top-down management style, where strong leadership in line with government visions, and is aided by the counsel of the International Academic Advisory Panel and funded by the National Research Foundation. A strong hierarchy exists where control is being exercised by senior management, with a line of action moving downwards through the Deans and with Department Heads being at the frontline of the command chain. It should be noted that both deans and department heads are appointed rather than voted into their positions, the latter being the case in some East Asian countries. This selection process not only allows competency to be assessed prior to appointment but allows orientations of deans and department heads to be closer matched with senior management.

Figure 5 clearly shows where the strengths and weaknesses are from the viewpoint of the professors surveyed. Essentially, the left side of the figure shows the efficiency which comes from a top-down management style, with a

clearer singularity of purpose and a shorter period of implementation. The right side of the figure is associated with the problems of such a style: a weakening of collegiality which has been a sought after element of university campuses; poorer communication between management and academics; and a lack of faculty involvement. Figure 2 (see third item on the right of the figure) also highlights the poor sense of community as another issue.

Thus, the Singapore case represents an interesting lesson for higher education management. In the first ten years of corporatization, Singapore universities have moved rapidly to claim their place in university league tables. They have done so by putting in place an effective top-down management system where a clear sense of purpose, backed up by performance indicators, motivated academics to achieve their research targets while maintaining their teaching commitments. The balance between effective leadership and faculty involvement is difficult to achieve in practice. The UAGF report (2005: 18) had hoped that Singapore's autonomous universities would "foster a greater sense of ownership and inspire a sense of belonging among their stakeholders, namely, the university Council, senior management, faculty, students and alumni so that they can feel a personal stake in the success of the university and play a more proactive role in helping the universities achieve their mission". In this first phase of evolution, Singapore universities have made great research strides at the expense of better communication, greater involvement, socially-oriented research, and as a result, suffered from a poor sense of academic community. Perhaps in the next phase of evolution, this may change.

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