Building research capacity: Changing roles of universities and academics

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Abstract

A nation's overall capacity depends considerably on its research. Universities, as centres of knowledge production and generation, play a critical role in the national research. This paper provides a discussion of universities' roles in building national research capacity, government quality assurance initiatives to enhance university research, institutional measures to build research capacity, and the impact of these expectations on academics. Many universities have changed their brief to include research and the production of knowledge as key to their institutional directions. As a result, university research has become highly competitive in a nation's capacity to deliver knowledge in the world market. Given the prominent role it plays in the overall national research efforts, university research is an indicator of performance and educational growth. In the last two decades, the desire to hold higher education accountable and the need to receive value for money have sparked government efforts to evaluate the research performance of their universities and academics in many countries. The results of these evaluations form the basis of the resource allocation decision of government funding bodies. Changes like these pose great challenges to higher education institutions and academics, particularly the role research plays in assessing their performances. Government funding, and international ranking and status drive higher education institutions to strive for research excellence. Institutional pursuit of a strong research capacity has led to managerial efforts to encourage and support research. Incentive systems have also been established to reward research. Research capacity enhancement measures have had considerable impact on academics. Academics are expected to conduct research and produce research publications. More research is required to understand the changing roles of academics and their work habits that may lead to building research capacity.

Keywords: higher education, research capacity, university research measures, academic roles

Introduction

This paper aims to depict changes in higher education around the world that pose challenges to higher education institutions and academics by reviewing the relevant literature. The past twenty years has noted significant changes in higher education in many parts of the world as a consequence of globalisation (Geuna & Martin, 2003; Mok, 2003, 2005). Higher

education is no longer tuition free and new universities are emerging from amalgamation and re-designation. Higher education institutions are given autonomy to enrol students instead of following national planning and, as a result, student enrolment has expanded rapidly (Mok, 2003, 2005). These changes pose great challenges to traditional higher education and academics alike. One of the challenges is the requirement of producing research as an increasingly important criterion for assessing an academic's overall performance (e.g., Ho, 1998).

Two decades or so ago, higher education sectors in countries and regions (e.g., U.K., Australia, New Zealand, and Hong Kong) undertook reforms which had impact on research. One reform is the inclusion of performance-based funding schemes (Geuna & Martin, 2003). Linking funding with research performance has put mounting pressure on higher education institutions to enhance their research capacity. It has also generated significant impact on many aspects of faculty members' academic life. Therefore the need to discuss the role that universities play in national research endeavours, government quality assurance initiatives to enhance university research, institutional visions of research and responses to national research policies, and the impacts of governmental and institutional research policies and measures on academics, is currently critical, especially in universities that are just developing a research culture. Making sense of the considerable attention given to research in government and university policies relies on understanding the underlying assumptions of those policies.

The Role of Universities in Research

It is widely accepted that research, as the most important source of knowledge generation, occupies a critical position in promoting a nation's prosperity and its citizens' well-being in the knowledge-based era (Abbott & Doucouliagos, 2004; Etzkowitz, Webster, Gebhardt, & Terra, 2000). Research not only helps solve practical problems and brings about material improvements via high-tech products, it also provides insights and new ideas that enrich human understanding of various social, economic and cultural phenomena (Abbott & Doucouliagos, 2004; Creswell, 2008). Research is also regarded as an important indicator of a nation's economic competitiveness for the present and the future (Abbott & Doucouliagos, 2004). However, it is research capacity building, the building of a nation's capacity to generate knowledge that is of central importance to countries all over the world (Conroy, 1989; Tanimoto & Fujii, 2003; Waworuntu & Holsinger, 1989).

Although government and private institutions have set up their own research centres and started their own research in recent years, universities continue to play a prominent role in knowledge production, particularly in the pure or basic research fields (anonymous, 2005; Conroy, 1989; Geuna, 1998; Loon, 2005). In Canada, for example, university research accounts for a little less than 40% of all research and development efforts in the country (Loon, 2005). According to Conroy, the importance of university research in the western world is two-fold. First, it is "strategic" and "long term" (p. 39), and contributes a fair share of effort and quality to a nation's overall research endeavour. Second, the influence of university research is profound and penetrates into various sectors, so it is indispensable to the survival and development of a nation (Conroy, 1989). Some of the roles played by university

research in the west include maintaining research infrastructure in all existing academic disciplines and creating new disciplines, maintaining the research standard and the nation's research excellence in specific areas, and training new researchers and informing university teaching (Conroy, 1989). University research contributions to national economic prosperity may be noted as research innovation (Etzkowitz et al., 2000). Research in humanities and social sciences has also benefited society and economy (Loon, 2005). The dependence of government policy making on research in economics and political sciences is a case in point. University research in the form of either basic research or patent licensing has significant impact on social and economic life of people (Loon, 2005).

Government Research Assurance Initiatives

Given the central role university research plays in a nation's competitive capacity in the world's market and the prominent position it occupies in the nation's overall research efforts, research becomes an important component of a university's mission and a key indicator of its performance. In most countries, higher education is primarily government funded, so it is essential that university research fulfils the nation's research objectives (Ito & Brotheridge, 2007). In recent decades, globalisation has significantly impacted on universities, and a new relationship between state and higher education has evolved (Deem, 2006; Mok, 2005). Governments become the buyers of the service, while higher education institutions are the service providers (Geuna & Martin, 2003). There are expectations from higher education stakeholders concerning the accountability of higher education institutions and the value returned for government spending on universities (Geuna & Martin, 2003; MacGregor, Rix, Aylward, & Glynn, 2006; Mok, 2005). In addition, governments in developed and developing countries alike have been cutting down on research funding to higher education, and universities are now encouraged to find external funding for part of their research (MacGregor et al., 2006; Mok, 2003; 2005). Stringent funding and public pressures necessitate government efforts to assess the quality and effectiveness of their higher education institutions. Research evaluation of higher education institutions becomes a key issue in most countries (Geuna & Martin, 2003).

In a review article, Geuna and Martin (2003) examined the university research evaluation schemes practised in 10 European countries, Australia and Hong Kong. They found that although the research funding systems in the 12 countries and region formed a continuum ranging from performance-based resource allocation to educational size based models, all the countries are trying to address the issue of university research efficiency and accountability by linking research to government funding. Among those countries that adopt performance-based funding, the UK is a typical example. The Research Assessment Exercise (RAE) was introduced into the UK higher education system in 1986 as a formalised evaluation process of the research quality of individual academics, projects, departments or universities (Geuna & Martin, 2003). Approximately every four to six years, British universities select to submit their research outputs to a subject specialist peer-review panel for a quality rating. Ranking results from this assessment form the basis on which UK higher education funding councils allocate research monies to higher education institutions (Deem, 2006; Geuna & Martin, 2003; Ito & Brotheridge, 2007).

Competition for funding among UK higher education institutions became more intense when polytechnics were re-designated as universities in 1992. Traditionally, polytechnics' missions were primarily teaching, and their research was not funded by the government. However, after being granted university status, they joined the competition for the unregulated research money, which makes research in UK universities more desirable (Deem, 2006). Since it was first carried out, the RAE has been repeated in 1989, 1992, 1996, 2001 and 2008, with each new implementation becoming more comprehensive and systematic (RAE, 2008). Although there are criticisms about the evaluation scheme, the British government determines to continue the practice in 2008, as the RAE has had positive effects. It has encouraged university research efforts and successfully directed resources to areas of research excellence (RAE, 2008).

Australian and Hong Kong higher education institutions underwent similar changes to those in the UK in the 1990s. After the 1988 higher education reform in Australia, former colleges of advanced education were given university status, or merged with established universities (Abbott & Doucouliagos, 2004; Hattie, Print, & Krakowski, 1994). The number of Australian universities has risen from 19 to 39, and the traditional binary system that had distinguished universities from colleges of advance education has been replaced by a Unified National System of universities (Abbot & Doucouliagos, 2004; Hattie et al., 1994). The creation of this new system has also changed government funding policies for research that used to rely on the size, status and course mix of the institution (Abbott & Doucouliagos, 2004). Parallel to RAE in the UK, Australia has been developing its university research assessment model (Abbott & Doucouliagos, 2004). The Research Quality Framework (RQF) is such an example, although it has recently been superseded by a new scheme (DEST, 2005; Carr, 2008; DEEWR, 2007). The RQF program was intended to evaluate the quality and impact of the university research in Australia so that the result of the assessment can provide a basis to direct government research funding to higher education institutions (Ito & Brotheridge, 2007). Introducing this research performance assessment scheme encourages competition for government funds among universities, and this puts pressure on higher education institutions to increase and improve their research outputs. Although the RQF ceased with the defeat of the Australian Coalition Government at the end of 2007, the research quality assurance system is retained by the new Rudd government to assess the research performance of the Australian universities (DEEWR, 2007). The simpler new system, *Excellence in Research for Australia* (ERA), was launched in 2008 to replace the RQF, which is claimed to have "failed to win the confidence of the university sector because it lacked transparency and did not reflect world's best practice. It was cumbersome and far too resource-greedy" (Carr, 2008, p. 5). Government funding is not linked to evaluation until the system's trustworthiness and status are well established (Carr, 2008; Hare, 2008).

The Hong Kong government launched higher education reform following the examples in Europe and Australia (Ho, 1998). In 1989 universities grew from two to seven, resulting in intense competition for funds among these universities. In 1993, a research assessment exercise modelled on the British RAE was started by Hong Kong University Grants Committee (HKUGC) to evaluate research productivity of the Hong Kong universities. Since then, assessment exercises have been conducted in 1993, 1996, 1999 and 2006 (UGC, 2007). The research assessment exercises evaluated the quality and quantity of research

conducted in Hong Kong universities, and the results of the assessment are used to determine the amount of funding allocated to individual universities (Geuna & Martin, 2003; Ho, 1998).

A similar but not very successful attempt to evaluate academic research performance was made by the Japanese Government in 1996 (Swinbanks, 1996). The Japanese University Council made proposals intending to reinvigorate the public sector research system by introducing assessment of research performance of university faculty members in Japan. Japanese public universities have been a privileged sector that has not been influenced by market competition because the government provides all required funding (Finkelstein, 2003). Employment in Japanese public universities meant life-long positions for academics. Although it met strong resistance from university professors, this reform attempt is an indication that academics in the Japanese universities might face the same research pressure felt by their counterparts in the developed world. Reforming Japanese public universities was attempted again in the new century. Two market-oriented initiatives have been introduced by the Japanese Ministry of Education into the public university system, wishing to make the latter more competitive. One of the initiatives is to change the tenure system into a contract and research performance-based system for academics. The reform threatens the old generation of academic staff, and has motivated the younger generation to exert more efforts in their work (Finkelstein, 2003).

Institutional Visions of Research

Institutional motivations for research emphasis. The above mentioned government policies and the other reform measures in higher education have affected institutional visions of research. Traditionally research had primarily been performed by the top echelon universities of the institutional hierarchy, whereas other higher education providers such as the former polytechnics and colleges of advanced education in the UK, Australia and New Zealand (Deem, 2006; Hattie et al., 1994; Pratt, Margaritis, & Coy, 1999) and comprehensive universities and liberal arts colleges in the US (Milem, Berger, & Dey, 2000) had focused mainly on teaching (Deem, 2006). Linking funding to university research performance in countries like the UK and Australia has reinforced the research vision and capacity of the traditional universities that had always been strong in research. The governments' objective to concentrate resources in areas of research excellence seems to be fulfilled (Deem, 2006; Genua & Martin, 2003). Research universities have an advantage in research productivity (Dey, Milem, & Berger, 1997), which allows them to secure larger shares of government funding to devote to world-leading research and best-performing research areas (Deem, 2006). On the other hand, former polytechnics and colleges of advanced education in the UK, Australia and New Zealand were granted university status, and encouraged to participate in competition with traditional research universities for research funding. This is understood by traditional teaching-based universities as a step towards changing the teaching-only image and gaining a research reputation (Deem, 2006). According to Deem, the aspiration of new universities in the UK can be detected from their readiness to take part in the 2008 RAE and from the mission statements of the six institutions upgraded to university status in 2005. Research enhancement and more research degree program offerings have been set as the long and medium term goals (Deem, 2006):

> The title gives clarity and prestige and acknowledges that we are at a level equivalent to other universities…Within five years we want to have more postgraduate students…in ten years, we want a significantly higher academic standing in key disciplines (p. 294)

Linking research performance of universities with government funding level is not the only reason why higher education institutions value research. Studies show that a high correlation exists between research productivity and the reputation of a higher educational institution (Hattie et al., 1994; Ho, 1998; Tang & Chamberlain, 1997), and it is an international practice to base ranking of universities on the research outputs (Liu & Cheng, 2005). Domestic prestige and world reputation are vital to the survival and development of a university. This is particularly true when government funding for public universities has been reduced in most countries (Mok, 2005). When universities are encouraged to find external funding for their research (MacGregor et al., 1996), and allowed to enrol fee-paying students (Pratt et al., 1999), the reputation of a university becomes highly important in attracting external research funding and high-quality students (Ho, 1998).

An additional but related reason why research is given considerable attention in modern higher education institutions may be derived from the image of Humboldtian universities. There are debates over university missions in relation to teaching and research (Deem, 2006), and a strong teaching tradition originated from Newman's (1957) book *The Idea of a University*, which advocates that a university's primary function is knowledge dissemination instead of knowledge generation. Nonetheless, the German Humboldtian model of a university seems to have exerted significant influence over modern universities in the world (Pritchard, 2004). The Humboldtian value about universities attaches great importance to freedom of knowledge pursuit as well as knowledge creation and dissemination. In Humboldtian German universities, the most highly-respected professors were excellent researchers. This attributed significantly to the traditional mission of universities in conducting research as well as achieving teaching excellence (Pritchard, 2004). Research that had been primarily conducted in the old established research universities and related with prestige and fame has become the aspiration of higher education institutions that have recently been granted the university status (Deem, 2006; MacGregor et al., 2006).

Institutional endeavours to enhance research profile. The changes in government's research funding policies compounded with the desire to achieve domestic and international recognition have motivated higher education institutions to improve their research status through research management and establishment of research-encouraging reward systems (MacGregor et al., 2006; Pratt et al., 1999). Some of the management measures taken include identifying and building research strengths by setting up research centres of excellence (MacGregor et al., 2006), making institutional research plans, establishment of an annual research activity report mechanism, setting up research databases, creating research committees to set research agenda, appointment of a new deputy director responsible for research, allocation of scholarship to encourage research, transferring more budgetary power to departments to encourage research, and seeking collaboration with high research profile partners (Thomas, 2001). Besides research management efforts to enhance research performance of higher education institutions, rewards in higher education institutions such as employment, promotion and tenure have been tied intimately with research outputs (e.g., Hemmings, Rushbrook, & Smith, 2007; Ramsden, 1994). Pratt et al. (1999) have documented

how an originally teaching-dominated management school was able to raise its reputation and research profiles of its academics through management policies and research reward schemes in a New Zealand higher education institution that has risen from a polytechnic to a university.

There is not as strong an association between research productivity and funding allocation in the U.S. as in other English speaking countries like the U.K. and Australia, but evaluation and ranking of universities have been practised for the last 82 years, and evaluation of research becomes more prevalent in recent years (Ito & Brotheridge, 2007). For individual academics, excellence in work is measured on the basis of research outputs, and the contribution to research is encouraged institutionally through reward systems such as appointment, promotion, and tenure (Hum, 2000; Ito & Brotheridge, 2007; Sharobeam & Howard, 2002). This does not only involve academics working in research and doctoral universities at the top level of university ranking. Faculty members in predominantly undergraduate institutions whose academics have heavy teaching loads are also expected to publish academically through promotion and tenure policies (Sharobeam & Howard, 2002; Tang & Chamberlain, 1997). According to statistics by Meyer (1998) about faculty rewards in American higher education institutions, academics who have published one refereed paper make 1.7 times less than those who have published 30 or more. American regional universities that have been transformed from former teaching-predominant teachers colleges are recruiting new employees with a current research orientation and qualifications (Tang & Chamberlain, 1997). In recent years, there has been debate over new policies about post-tenure reviews in American universities. A number of American institutions decided to have regular evaluation of their tenured faculties, as various tenured positions produced “lazy” or “incompetent” academics (Tang & Chamberlain, 2003, p. 103), and a system of periodic review aims to rectify the situation.

Promoting research performance and striving for research excellence are not only being pursued in western universities, but has become a prominent goal to be attained in Asian and African universities (Ochai & Nwafor, 1990). In China (Yuan, 2002), Hong Kong (Ho, 1998), and Taiwan (Fan, 1997; Tien, 2000, 2007a, 2007b), various incentive mechanisms have been adopted by universities to upgrade their research profiles and encourage research production of their faculties. For example, the Hong Kong University Grants Committee, the university funding allocation body, suggests that one journal article per year in a local refereed journal should be the minimum amount of research performance for academics (Ho, 1998). Accordingly, Hong Kong universities set up research publication requirement standards for promotion, tenure and reappointment. Varying requirements of research performance have been practiced in different universities across Hong Kong. In one university, academics need to publish two papers in international journals in the past three years for tenure, and two research papers in local journals for reappointment (Ho, 1998).

Impact on academics

The intimate association most higher education institutions establish between appointment, promotion, reappointment and tenure, and research performance has rendered significant impact on academics (Edgerton, 1993; Fan, 1997; Ho, 1998; Hum, 2000; Serow,

2000). Such impact includes psychological pressures to produce research publications, changing belief about research and work habits, and consideration of work mobility.

Despite institutional differences, research has become a desirable activity for academics to gain appointment, and a pathway for promotion and job security. MacGregor et al. (2006), analysing factors associated with research management in Australian commerce and business faculties, point out that "over the past decades, the academic's role as a researcher has become more and more important, both as an indicator of how well the overall institution is perceived and how well the individual academic is compensated" (p. 59). It is reported that in Hong Kong, some faculties were dismissed from their academic positions because of unsatisfactory research performance (Ho, 1998). A minimum number of publications can be required for a university academic to receive "substantiation" (p. 196), promotion or reappointment; thus putting mounting pressure on faculty members who used to enjoy comfortable, prestigious and well-paid positions before 1989. According to Ho, the "publish or perish" dictum among university faculties may be a reality. In a survey (Sharobeam & Howard, 2002) of 154 American faculty members from 127 predominantly undergraduate institutions, it is found that despite a heavy teaching load, faculty members are required to conduct research to get promotion and tenure. More than half of the surveyed faculty members report feeling pressured to do research and publish. This becomes especially demanding when there are time and resource restraints. However, faculty members surveyed were quite productive over the five-year investigation period.

A reward mechanism that stresses the importance of research has brought about marked increases in academics' research outputs over time across all types of institutions (Dey et al., 1997; Massy & Zemkey, 1994). This increment in research productivity may be an outcome mediated by the change in academics' beliefs about research. As mentioned earlier in the paper, Pratt et al. (1999) report a case study about how an institution that had focused predominantly on teaching has developed a research culture. Undergraduate teaching had been the chief mission of the institution with emphasis placed on developing the practical ability of the students. Teaching and practical ability had been the basis for faculty reward such as promotion and employment. Only 34% of the staff were PhD degree holders and research productivity had been low. A change in 1988 brought the graduate degree program to the institute, and new management realised that diversification of student enrolment was necessary given the market competition in the higher education market. In order to enrol good quality international and graduate students, highly-qualified academics with a high level of research performance were required urgently. The institute developed a set of strategies to build a nurturing research culture. They primarily targeted faculty members' beliefs, as culture is a shared belief held by people within an organisation (Williams, Dobson, & Walters, 1993). These changes in the academics' beliefs involved the institute's mission, performance standard, potential of staff, and understanding the importance of research. Beliefs about the importance of research were fostered among school academics through the changes to systems and structures of the institute. These changed beliefs seem to lead to improved research productivity among academics (Pratt et al., 1999).

Improvement of research productivity of academics may be one of the outcomes of academics' changed work habits, as a result of institutional expectations. Massy and Zemkey (1994) investigated how academics allocate their time to research and teaching and report that

reduced teaching loads for academics in American universities and colleges allow academics more time for research. Notably, the increased time for research appears to be at the expense of teaching. However, a longitudinal study of American academics over the past 20 years reveals that American faculties are spending more time on both research and teaching, so it may be the case that increased research time does not compromise teaching. Despite the inconclusiveness of studies in this field, it seems that academics work longer hours than they did 20 years ago and research contributes to this increased workload (Milem et al., 2000).

The research performance of individual academics not only affects the reward they get within the institutions, but it exerts influence on academics' inter-institutional mobility, especially upward mobility. Yano and Tomita (2006) studied the relationship between Japanese professors' mobility and their research performance. A survey investigated 375 full professors in the field of economics working in Japanese education universities and research universities. The annual average number of academic papers is used as a measure of research performance. They found that those who moved upward from one university to a more recognised institution have higher pre-move publication rates than those who have never moved. The highest pre-move publication rate appears among those who moved from a research university to a more prestigious one. This suggests that the success of a Japanese professor's upward mobility depends to a great extent on research and publications. The role of research engagement in the life of university faculty can be best summarised by Sullivan (1996), "publication in recognized scholarly outlets is the prime indicator of academic worth, paving the way to rewards such as promotion, tenure, and research funding" (p. 40).

Conclusion

This literature review indicates that emphasis on research in higher education institutions across the world is not attributable to one cause only. It is a product of the combined forces operating nationally and institutionally. Nationally, university research as a key indicator of the overall national capacity and educational well-being has been given significant attention. Further, accountability and value for money in higher education compel governments to assess performance of higher education institutions.

Institutionally, higher education institutions and departments are motivated by the desire to win international and national recognition, which are closely associated with the research performance of their academic staff. This recognition elicits further benefits for building research capacity, including securing grants and higher degree students. To achieve the goal, higher education institutions and departments establish reward structures and enhance research management to encourage and reward research among academics. Government and institutional measures in relation to research have brought about far-reaching impacts on academics, who are under pressure to conduct and publish research, and balance other workload commitments.

In this paper, the need to uplift national economic power, the prominent role that research plays in overall national research, and the changing relationship between the state and higher education sector drive governments to implement research quality assurance policies in universities. These policies and initiatives have produced considerable impacts on both higher education institutions and academics. To promote research capacity, universities

need to establish effective research capacity building management systems to encourage academics' research endeavour, without ignoring other forms of scholarly excellence such as teaching. Higher education institutions need to develop a nurturing research environment to facilitate the development and production of research so that an academic's workload is manageable, and doing research a meaningful and enjoyable endeavour. This is especially vital of newly-designated universities or institutions aspiring to gain research recognition. As the ultimate agents of research production, academics' mindsets about research and their actual practices are of utmost importance to the process. It is necessary for future research to study academics' perceptions about their changing roles, in particular the perceptions of those who worked in teaching-dominated institutions but are expected to conduct research as a performance requirement. A deep understanding of their views about research and their work habits impacting on research capacity building may facilitate the development of their research profiles..

Higher education institutions and academics face changes and challenges in English-speaking countries. Studies about these issues in other cultural contexts such as Asia are scarce. However, such studies may contribute to a more balanced picture and richer understanding about research capacity building in higher education globally. The present review may also provide a basis for comparing current practices in higher education with academic research outputs in different parts of the world.

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