“Strategic capacities in US universities – the role of business schools as institutional builders”

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ARTICLE INFO	Guillaume Carton, Charles McMillan and Jeffrey Overall (2018). Strategic capacities in US universities – the role of business schools as institutional builders. *Problems and Perspectives in Management*, *16*(1), 186-198. doi:10.21511/ppm.16(1).2018.18
DOI	http://dx.doi.org/10.21511/ppm.16(1).2018.18
RELEASED ON	Thursday, 01 March 2018
RECEIVED ON	Friday, 18 August 2017
ACCEPTED ON	Monday, 30 October 2017

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JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
54	5	3

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BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy, 40022, Ukraine

www.businessperspectives.org

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STRATEGIC CAPACITIES IN US UNIVERSITIES – THE ROLE OF BUSINESS SCHOOLS AS INSTITUTIONAL BUILDERS

Abstract

The global expansion of the higher education and professional faculties like business schools offers a case study in the strategic capabilities of universities and professional schools like business to build academic strength, reputation, and legitimacy. The expansion of business schools reflects novel strategies like ecosystems collaboration and network advantages, presenting new challenges for quality, relevance, and competitive threats from the consulting industry, corporate universities, MOOCs, and highly-specialized business schools. The paper concludes with recommendations for business education.

Keywords strategic capacity, management education, networks as ecosystems, management societies, theory vs. practice, e-education

JEL Classification A2, I2, M16, P48

Received on: 18th of August, 2017
Accepted on: 30th of October, 2017

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INTRODUCTION

The growth of emerging market countries like the BRICS – Brazil, Russia, India, and China, plus countries like Vietnam, Indonesia, Nigeria and nations in Africa – has led to an explosion of university student enrollments. Some projections suggested that by 2020, global enrollment will rise to almost 200 million students, compared to 170 mln in 2009, with India and China alone accounting for 55 percent (British Council, 2012). In China and India, with 40 percent of global population, enrollment projections, according to Van der Zwaan (2017), face "the mammoth task of expanding their number of universities and colleges of professional education by what may be a factor of 100, to meet the demand".

The enrollment trends and outward migration toward top-rated universities in the US and Europe evoke serious policy debate like the 'brain drain'. In 2002, ten US universities had operating revenues in excess of $2 billion, 55 in excess of $1 billion, and over a hundred exceeding $500 million (Ward, 2010). The immediate winners are leading American business schools and the main degree, the Masters in Business Administration (MBA), as more students enrolled in business. With approximately 14,000 business schools worldwide, there are huge gaps between the biggest and the rest, and many faculty have limited (if any) practical experience (McMillan & Overall, 2016). These challenges for business schools apply equally to other professional schools like medicine and engineering in the new digital era.

This paper assesses these trends, with three aims. First, both professional schools in general, and business schools have vastly increased

their research focus. Second, business schools now face new challenges to integrate science knowledge with the practical world of professions. Third, university-based business schools may enhance the global reach of the top universities via institutional reputations for student and faculty recruitment, but only if they have the strategic capacity of the university, like research programs, publication outlets, and network alliances. In addition to strategic capacities of universities (Thoenig & Paradeise, 2016), top business schools display three vital characteristics, namely: ecosystem model of organization, network advantages, and tools of collaboration.

1. THEORETICAL ISSUES IN UNIVERSITY GOVERNANCE

By standards like sheer numbers (students, faculty), disciplinary focus, budgets, and multiple goal structures, universities are complex organizations (Perrow, 1970), illustrated by variations in undergraduate programs, graduate, and doctoral programs. As complex organizations, universities may be managed implicitly on norms of rationality (Thompson, 1967), or as complicated social systems where "certain strategic problems require multiple forms of coordination at once, as when inputs may not lead to known outputs, or where action has little causality with goals, or where stakeholders and outcomes are not directly connected" (March & Olsen, 1976). Because of their decision and goal structures, universities can be classified as loosely-coupled organizations (Weick, 1976), displaying boundaries, resources, and measures of self-autonomy, when "… stability and adaptation are achieved with less interdependence, less consensus, less mutual responsiveness" (Weick, 1976, p. 110).

Tightly-coupled organizations, by contrast, have subunits, departments, and executive functions designed as reciprocal interdependence (Thompson, 1967). They enact financial and intellectual resources to lessen or inhibit learning failures, such as internal audit systems, quality control audits, and governance rules dealing with incompetence, continuous errors, willful blindness, and mental rigidities. Organizational design features also influence the learning processes in interdependent tasks and subunits, where faulty tasks at one stage impact the fault lines of future stages (Kremer, 1993). However, weak learning competences, even augmented with slack resources, can lead to errors of judgment and a cascade of flawed decision choices and myopic behavior thwarting coordination challenges.

Universities, in short, show coalition behavior and political interests of students, faculty, departments, and professional schools for resources, administrative positions, and personal advantages, illustrating how the "quasi-revolution of conflict" may be a function of political accommodation of interests as a preference for optimizing outcomes (Allison, 1969; Cyert & March, 1963). Recognizing social systems as 'ensembles des jeux' – collections of power games where decision-making reflects hierarchical decision bias and 'rules of the game', universities represent cleavages and conflicting interests but often less open and obtrusive by creating forms of legitimacy and openness (Hickson et al., 1986).

Indeed, in some cases, as described by March and Olson (1976), cleavages in universities allow "connections among problems, choice opportunities, solutions and energy by administrative practice" (p. 31) with varying degrees of action and budget protocols by faculty or department, that make common planning and resource allocation immensely complicated, or a planning process that March and Simon (1958) describe as "sufficiently stiff that meeting all of them simultaneously is not a trivial matter" (p. 176). How universities orchestrate their 'strategic capacity' – a roadmap or framework to align its internal components for common ends – define the outcomes and successes of first rate institutions. More specifically, strategic capacity in universities refers to: "…how much its internal subunits – disciplines, departments, colleges, faculty, management, administrative departments, various councils – shape its identity, define its priorities, approve its positions, prepare the way for general agreement to be adopted on its roadmap and provide a framework for the decisions and acts of all its components" (Thoenig & Paradeise, 2016).

Consider the case of a special form of university's strategic capacity, their research success.

2. RESEARCH UNIVERSITIES

In the post-1945 era, American research universities carried out the bulk of research for the US military, and as contractors for the pharmaceutical and aerospace sector. This research output comes from the traditional faculties like Arts and Science, but also professional schools, e.g. law, medicine, engineering, and a plethora of other schools like business and computer science. US universities have made America, with five percent of the world's population, the scientific leader, accounting for one third of the world's researchers, 40 percent of R&D spending, over a third of the scientific articles and 44 percent of the world's citations, and a disproportion of the Nobel Prizes – 56 of 136 in medicine, 53 of 147 in physics, and 49 of 128 in chemistry.

Data from annual surveys of American university endowments, to cite 2009 is a case study, show that 842 US institutions, including public and private colleges, their supporting foundation and community colleges, represent $306 billion in endowment assets. The average annual three-year return for institutions participating in the study was –2.5 percent, while the average annual return for the trailing five years was 2.7 percent (Commonfund Study of Endowments, 2009). The top 15 US universities, led by Harvard and Yale, each with over $30 billion in endowments, vastly exceed the amounts of all the universities in Europe. As such, research universities have advantages to cross-subsidize research programs during periods when grants run out, when young researchers are at an early stage of the publications output, and provide overhead to the grant application process.

Stanford's James March (2008) explains the nature of great scholarship:

Great scholarship thrives on combinations of scholars brought together under institutional conditions that stimulate and support them. For much of modern history, those conditions have been associated with universities. Traditions of great universities, including academic freedom and the support of intellectual discourse, fundamental research, and the unconditional and unremitting pursuit of excellence, are the foundations of contemporary scholarship. Universities vary in the degree to which they foment scholarly creativity and vigor, and there are many universities that make negligible contributions to scholarship, but in modern times, major scholarship has been overwhelmingly associated with universities as institutions of higher learning. When universities, their schools, their institutes, and their departments sustain the institutional qualities essential to scholarship, scholarship thrives. When they fail to do so, scholarship withers (p. 381).

Curiously, while American research scholars today account for a third of the world's science and engineering articles in peer reviewed journals, US research universities thrived only after the Second World War (Baxter & McMillan, 2008). However, by the time of the election of John F. Kennedy in the 1960s, and publicly-funded initiatives like the mission to go to the moon, similar in concept to the Manhattan project to build an atom bomb, selected research universities conducted most of the research, and public intellectuals like Drucker (1968) and Bell (1971) were forecasting a knowledge economy and knowledge-based workers.

The trends then facing the US soon applied to all advanced countries. While the first decades of the 20th century were a signal of the march of science (Gordon, 2000), a 1946 report, Science: The Endless Frontier, headed by Vannever Bush, (drafted by the wunderkind of the American economics profession, Paul Samuelson), was a glowing expression of American euphoria and idealism. Ideas about the curriculum in medical

Table 1. Profile of top 25 US research universities (2008) (all figures USD)

Source: Data from center for measuring university performance, 2009.

Key inputs	Private institutions (N = 14)	Public institutions (N = 11)
Annual research funding (range)	$188 mln – $1,050 mln	$443 mln – $823 mln
Annual private donations	$188 mln – $832 mln	$134 mln – $300 mln
Doctorates granted annually	277 – 903	145 – 819
Post-doctorates	312 – 4286	216 – 1044

schools and practical experience of dealing with patients in the hospital wards, took time to impact the business school curriculum at places like Harvard and Chicago[1]. More technically, the role of science and ideas increasingly accounted for an economy's growth (see Romer, 1990).

3. THE ENDLESS FRONTIER OF BUSINESS SCHOOLS

In the post-war era, American corporations expanded abroad with direct foreign investments, especially in knowledge industries like computers, banking, aerospace, and pharmaceuticals, and various political writers, posted warnings of US economic dominance, such as Servan-Schriber's (1967) Le Défi Américain. Despite minor variations, US business schools began to dominate the rankings of the Financial Times, the Wall Street Journal, or Business Week. Comparative surveys of management practices by academics (Bloom & Reenan, 2010) places US management as the benchmark for high corporate performance.

Management development based on academic disciplines – political science, psychology, and economics – first began in the 1930s. Irving Fisher, a Yale professor whose 1930 book, A Theory of Interest, attracted attention, as his views on gold, interest rates, money and banking, and sound money were widely accepted by the American business establishment[2]. In 1938, a landmark book, The Functions of the Executive, written by Chester Barnard (1938), a top executive at New Jersey Bell Telephone, focused on the corporation as a total system with conflicting moral codes and insightful knowledge of psychology and sociology. The growth in the union movement, and more higher education enrollment, forced a reconsideration of managerial practices, aided by maturity of the economics profession and interdisciplinary thinking to practical uses of economic analysis[3]. Once seen as trade schools, top US business schools were supported by the Ford and Carnegie Foundations, reputation-creators of the universities in unprecedented ways – hiring of star faculty, enormous research budgets, research output (including journals and publishing houses, such as Harvard Business School Publishing) as a revenue source, and outside funding, especially from wealthy alumni (Cyert & Dill, 1964). In time, the MBA degree became the path to higher salaries and better career prospects, despite high tuition costs (Figure 1). Now even prestigious universities like Oxford and Cambridge in Britain, or in many commonwealth countries, cultivated their business schools, with a desire to emulate the lessons of Harvard (Khurana, 2007).

The origin of a strong research focus in US business schools started in the economics departments but spread quickly to business schools, where novel methodologies and mathematical tools, focusing on optimization models, were adopted in courses like production management and finance

1 American economists were the first to understand the full implications of science, foregoing the usual mantras and dictums of classical economists, based on exogenous inputs of raw materials and physical labor as capital investment and the contributions of scale. Instead, they turned to endogenous factors like knowledge and technology, represented by the cumulative expenditures on R&D, represented by the formula Y = AK, where Y = production, dependent on A = knowledge and K = physical capital, like the latest machinery, computers, and machine tools. These developments led to new theories about education, human capital, quality of management and professional staff, and R&D spending. This spending gap led to a divergence in incomes of countries around the world, and by unequal performance of companies within a single industry. Global spending on science, or R&D steadily rose as a percent of GNP, from $522 billion in 1996 to $1.4 trillion in 2012, with large variations by country as a percent of GNP: Saudi Arabia 0.04, India 0.08, Sweden and Japan 3.7, the US 2.9, and China, 1.7. The new research model, mostly housed in universities, not corporations or government labs, is a virtuous cycle of ideas: discovery → of peer approval and funding → research program → disseminate results → new projects. The days of the lone wolf research scientist is largely an obsolete model. To cite a specific example of dissemination of research, by the end of 2012, there were 28,100 scholarly peer reviewed journals, with some 1.7-1.8 million articles, and about 20 percent freely available, but perhaps another 10 percent via personal websites, university websites, and firms that disseminate research: Coursera, UDACity, Udemy, and GoodSemester. For background, see The STEM Report: An Overview of Scientific and Scholarly Journal Publishing (2012), The Hague: International Association of Scientific, Technological, and Medical Publishers.

2 New economic and financial models, and wide media attention to finance, led to a new society, the American Finance Association, starting at a meeting in Philadelphia in 1939 and a new journal, published as American Finance, began in 1942 with the first issue addressing articles on wartime financing. In 1946, that publication became the Journal of Finance. Since 2000, five of the Presidents came from the University of Chicago. Similar national associations started in other functional areas – accounting, marketing, human resources, logistics, and supply chain – further accelerating the diffusion of best practices in American industry but increasing the trends toward subspecialties.

3 The erudite, well traveled and connected Harvard economics professor, Joseph Schumpeter, an Austrian by birth and former Minister of Finance, suggested the advantage of 'scientific' economists was a command of techniques, classified as history, statistics, and economic sociology. "It is the sum total of such gadgets – inclusive of strategically useful assumptions – which constitute economic theory. In Mrs. (Joan) Robinson's unsurpassably felicitous phase, economic theory is a box of tools" (Schumpeter, 1948, p. 50).

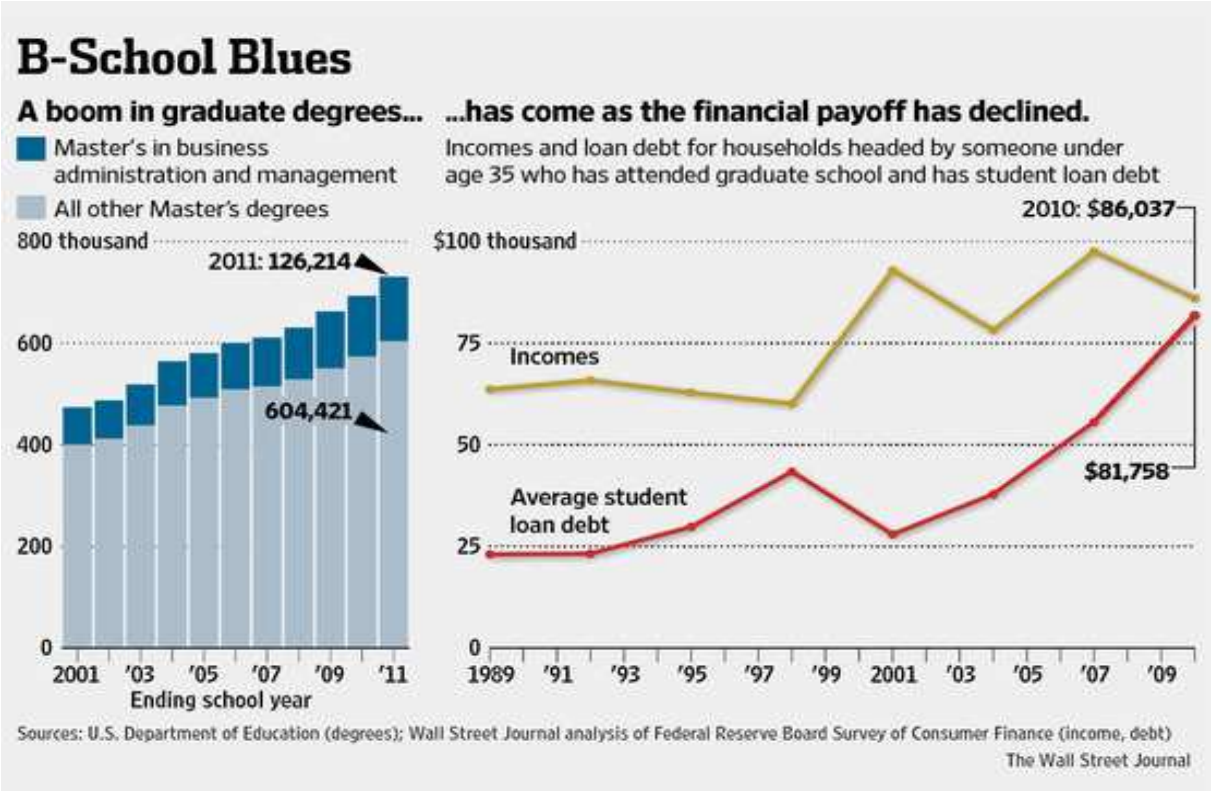

Figure 1. More graduates, lower salaries

(Chames & Cooper, 1961). Top US schools became a voice domestically and internationally to be an advocate for science-based approaches to research. And no scholar had so much academic influence as the Nobel Laureate Herbert Simon[4] whose career illustrates the new foundations of management as a scientific endeavor:

…what chiefly characterizes creative thinking from more mundane forms are (i) willingness to accept vaguely defined problem statements and gradually structure them, (ii) continuing preoccupation with problems over a considerable period of time, and (iii) extensive background knowledge in relevant and potentially relevant areas (Simon, 1983, p. 4570).

The curriculum was transformed, as first year core courses in psychology and organization theory, microeconomics, and statistics, and all functional courses like accounting, finance, marketing, human resources, and strategy were enriched by disciplines like psychology, sociology, and history. New academic journals intruded on traditional subjects, such as operations research, consumer behavior, organizational theory, capital markets, and corporate strategy. Internally, schools were organized around functional areas for teaching and research, a contrast to the 'Carnegie style' characterized by its interdisciplinary, heterodox and problem-solving approach. More importantly, the Carnegie approach contrasts with other models.

This community, rightly called a mirror of the Vienna Circle (March, 2008), combined scientific methods and practical work gathered in an industrial setting to a range of functional problems. GSIA planned to focus on only two fields of research inquiry: organization behavior, with Harold Guetzkow and Herbert Simon, and man-

4 Simon's (1947) Administrative Behavior, citing E. Tolman's analysis of behavior cognitions, Purposive Behavior in Animals and Men, and his novel views on learning processes and concepts like purpose (goals), thought processes (cognitive psychology), and cognitive maps became a mainstay of courses in leadership, strategic management, and organizational design. Subsequent editions included a 1967 paper written in Journal of Management Studies, then a publication of Manchester Business School, "The Business School: A Problem in Organization Design" setting out, almost as axioms, the proper role and organization of business schools. For background, see McMillan (2016).

agement science, headed by William Cooper[5]. Chicago's emphasis on conceptual knowledge and action skills, based on clear economic principles of profit-maximizing behavior, especially in communications and presentations, eschews domain knowledge of specific industries or sectors (David & Hogarth, 2012). The case method at Harvard addressed strategic challenges in industries and companies, and cultivated models and applications for judgment, intuition, and entrepreneurial flair as inputs to executive leadership. Business schools elsewhere followed these models, in whole or in part.

The financial media's laudatory coverage of finance increased the demand for finance specialists – the Booth School at Chicago could boast it had eight Nobel laureates on faculty. US business schools located in large financial centers – New York, Boston, Chicago, or San Francisco – experienced significant enrollment expansion. These clusters of financial expertise soon included graduates, part-time and visiting faculty from firms devoted to venture capital, private equity, wealth management, hedge funds, sovereign wealth institutions, pension funds, and wealth management, a signal of massive MBA recruitment from the top US schools, a virtuous cycle of the better getting better.

4. STRATEGIC CAPABILITY OF BUSINESS SCHOOLS

The steady but inexorable rise of world class universities is a central element of economic development (Salmi, 2009). Studies that document the strategies and internal structures of 'top of the pile' universities, highlight the need "to take advantage of this variety to fulfill the complete range of higher education missions rather than trying to reduce it to a single format and impoverish the whole system" (Thoenig & Paradeise, 2016). Business schools are central to that feature of strategic capacities, and the US business school within a university-based setting has spread around the world (Lorange, 2008; March, 2008), starting in the late 1950s to the UK and Europe (Franks, 1963; Durand & Dameron, 2008).

American universities and their business schools had three strategic advantages. The first was straightforward: the top US universities were extremely well-funded, by governments, by alumni donations, and by federal labs and agencies (e.g. NASA) especially in the natural sciences, engineering, and medicine, which each cultivating powerful ecosystems (Moore, 1993) that combines "the complex interplay between competitive and cooperative business strategies". Ecosystems, clusters, and superclusters illustrate the second advantage, their strategic capacity to design a network learning among constituent stakeholders, e.g., hospitals, technology firms, defense contractors, and local governments. Such networks demand a shared governance model, each with their own but separate competences and capabilities that build and nourish knowledge sharing as an institutional asset (Moore, 1993). Business ecosystems vary (see Figure 2), based on history, location, and internal capabilities. Universities and professional faculties mobilize stakeholders – students, faculty, alumni, and partners in the public and private sector – to build intellectual capital and institutional knowhow (Berman, 2012). Clearly, location is a big advantage, where many ecosystem firms in Silicon Valley – Apple, Cisco, and Google – grew from the entrepreneurial start-up culture associated with the graduate programs in the natural sciences, engineering, and math programs at Berkeley, CalTech, and Stanford universities.

The top-ranked US business schools illustrate this model, combining a portfolio of a critical mass of faculty, a stream of research output in the top journals, publications and cases, and custom executive programs that enhance the global brand. Harvard, for example, operates both the Harvard University Press, the Harvard Business School Press, and such outlets as the Harvard Business Review, with a subscriber list that is produced in eight languages, hence an annual budget in excess of $1 billion. Top schools can charge yearly tuition ranging from $80,000 – $120,000, often in

5 An indication of the influence of the Carnegie research on business school teaching and research, including the level of citations of leading books and journal articles (see March, 2008), came from publications like March and Simon (1958), Organizations, Cyert and March (1963), The Behavioral Theory of the Firm, Cohen and Cyert (1964), Theory of the Firm, March (1965), Handbook of Organizations, and a range of studies in specific topics, sometimes based on doctoral thesis, such as Clarkson (1962), Portfolio Selection: A Simulation of Trust Investment.

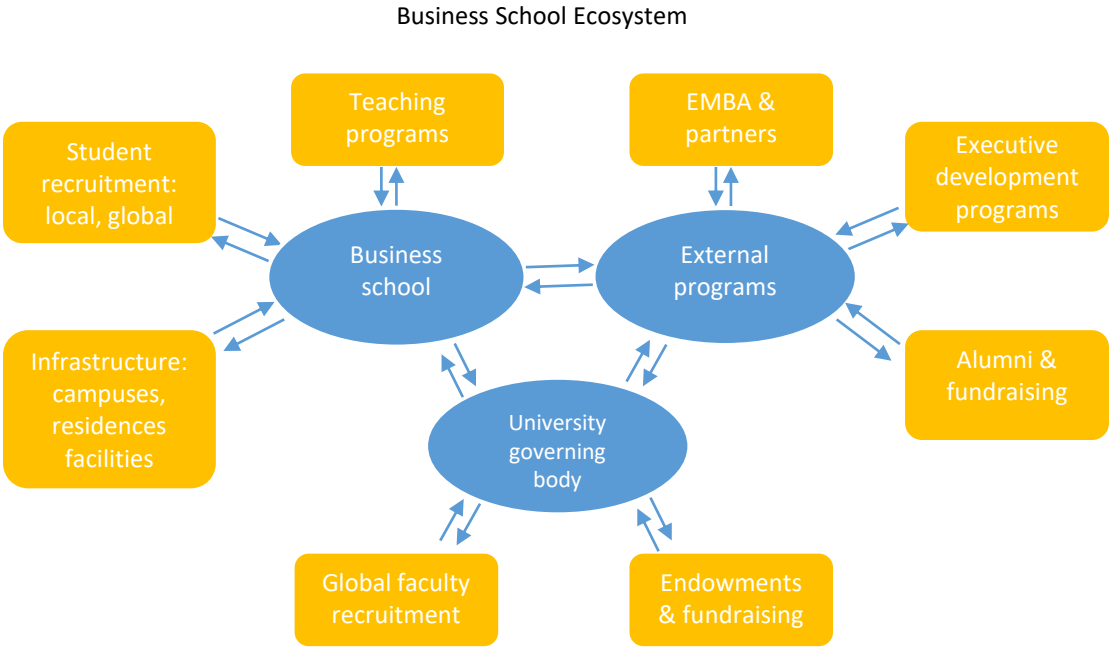

Figure 2. Business School Ecosystem

alliances in Europe and Asia. Harvard pioneered the case study approach and sells cases globally (Christensen, 1987). The third advantage is their global network advantages (Johnson, 2010), often extending to think tanks, business associations, lobby groups, and military academies. The management consulting industry, where many business graduates seek jobs, now exceeds $100 billion globally (Kiechel, 2010). The MBA education industry includes not only 14,000 business schools worldwide, graduating over 200,000 students per year, some 126,000 in the USA alone (see Figure 1), a 74 percent increase from the 2000–2001, a faculty career ladder where graduates of the top US schools become faculty, deans, and administrators in foreign schools.

In an ideal world, these organizational network arrangements for the top schools offer specific competitive advantages against their rivals. The first is positional, where individual faculty and the business schools 'bridge' multiple global networks of faculty. The second is structural, where patterns of connections impact the effectiveness and acuity of information flows within and between organizations, via research and teaching models, faculty exchanges, and student recruitment. The third is adaptability and agility, where external demands require network linkages to allow institutional flexibility, relatively unfettered by bureaucratic protocols. Indeed, the dynamics of network interactions between individuals, groups, organizations can strengthen and nurture network ties, shared embeddedness of specialized knowledge, and sustained learning (McMillan, 2010), but widening the knowledge gap across different business schools.

5. THE GROWING KNOWLEDGE GAP IN BUSINESS SCHOOLS

Today, there is an implicit 'arms race' to become a top-ranked institution. Deans and administrators outside the US attempted to imitate the US business school model, with top faculty publishing in mainly American academic journals, and the MBA curriculum adopting American textbooks, teaching materials, and cases (McMillan & Overall, 2015), even though there is a growing backlash against the media ratings, based on simplistic methodologies, survey designs, and accuracy of their findings (Bachrach et al., 2017). Many students fear that corporations will recruit only from Tier 1 schools, the flight to quality syndrome, reinforced by the fact that the number of econo-

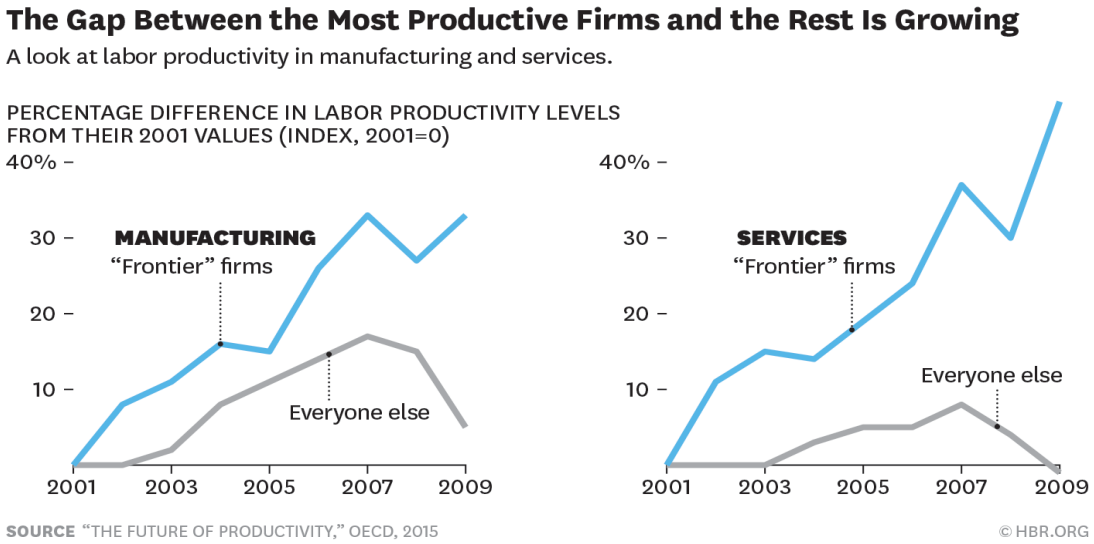

Figure 3. Frontier firms vs. others

mists, often in finance areas in business schools, equals the number of US economists in the rest of the university (Fourcade et al., 2015).

The United States and its higher education system – described by The Economist magazine (September 8, 2005) as 'the best in the world' – and its lead in R&D and science, roughly three percent of GNP (but skewed by military funding) slowly matched by growing commitments to R&D in OECD countries, in the 3 percent range of GNP, is opening a knowledge gap in the corporate world, a maxim of the best and the rest (Figure 3).

Many fundraising efforts are based on the research and creativity of corporate-university linkages, where strategic capacities in R&D commercialization have huge fundraising advantages for universities and their business schools (Fragueiro & Thomas, 2011). Increasingly, even small countries (like Singapore or Israel), have created research clusters to forego the brain drain to the US. Other countries like Brazil, India, or China may not have the breadth and scope of America's research universities, but they still have world-class research institutions. India's system of technical universities now includes new professional schools, including management.

Today, finance is a symptom of the curriculum challenges where parochialism, sub-specialties, and departmentalizing of disciplines weaken the

Table 2. Profiles of two management societies: Academy of Management and Strategic Management Society

Core attributes	Academy of Management	Strategic Management Society
Date of founding	1936	1981
Key participants	Charles Jamieson William Mitchell	Dan Schendel
Original membership	10	12 founders
Current membership	19,000	3,000
Current structure	25 Divisions:	12 interest groups
Journals published	1. Academy Annals 2. Academy of Learning and Education 3. Academy of Management Journal 4. Academy of Management Review 5. Academy of Management Perspectives 6. Academy of Management Discovery	1. Strategic Management Journal 2. Strategic Entrepreneurship Journal 3. Global Strategy Journal
Governance	Elected board + Professional staff	Rotating board + Professional staff
Location	Pace University, N.Y.	University of Illinois, Chicago

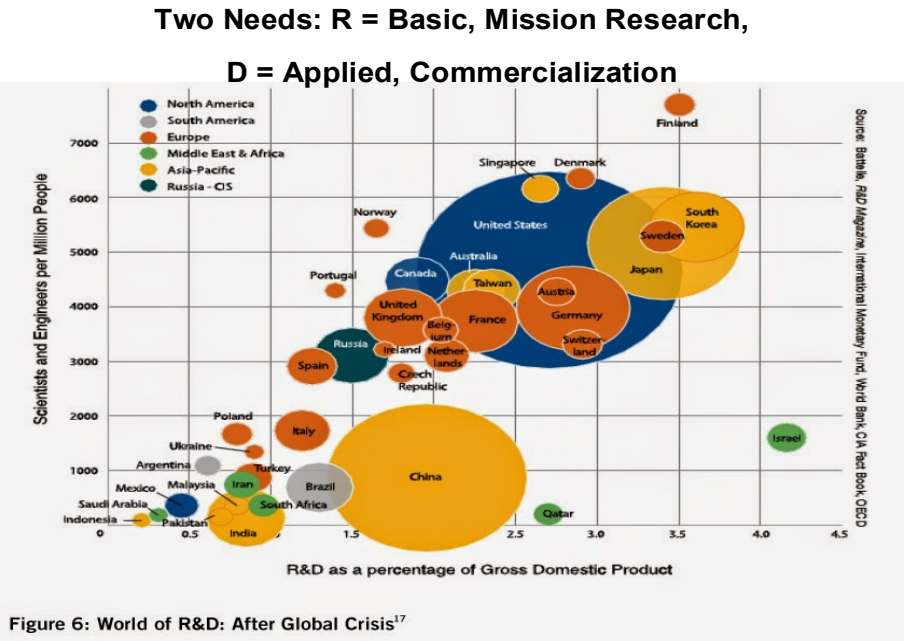

Figure 4. The science-commercialization continuum

intellectual and professional identities of faculty. The four core disciplines – economics, psychology, sociology, and history – have their own subspecialties, and it is clear by citations and references that the intellectual narrowness is growing. Citations in the top 25 economic journals show only 4.1 percent and 2.1 percent references to political science or sociology publications, and political science and sociology journals cite only 0.8 percent or 0.3 percent to economic journals (Fourcade et al., 2015). This compartmentalizing is reinforced by status, committee structures, and attention spans of faculty, as well as the two management societies, the Academy of Management and the Strategic Management Society (Table 2).

At their annual meetings, rotating in different countries, few corporate executives, policy analysts, or consultants attend, even though they are now leaders in codifying design structures and processes of best practices pioneered by business firms (Micklethwait & Wooldridge, 1996). The two US-based management societies and their respective journals contrast with the functional subjects like finance (Journal of Finance), accounting (The Accounting Review), marketing (Journal of Marketing), and production (Management Science). The cycle time of submission (if the editors accept the manuscript) to actual publication (usually requiring several rounds of revisions) can be 2-3 years.

The Strategic Management Journal as a forum for strategic management, was intended to combine the work of business school scholars, practitioners, and consultants and annual conferences would be a forum for close exchange (Schendel, 1980). Today, this asymmetric focus extends to management journals, where the top American management journals, like those of the Academy of Management, tend to have North American origins, while European journals have European authorship (March, 2008). Critics go further: as the discipline of economics abandoned its legacy of moral philosophy, history, political economy, institutional economics, or industrial sociology, it attempted to copy the paradigm of the natural sciences, especially physics[6]. As business schools introduced new, 'softer' courses in ethics and corporate responsibility, downplaying courses in international business or corporate governance. As Simons (2013) notes, "students are taught how to analyze and formulate strategy, but they learn little about how to organize and mobilize resources to execute those strategies" (p. 30).

6 Paul Samuelson (1961), the precocious enfant terrible of the economic profession, addressed this issue in his presidential address to his peers in 1961: "My own scholarship has covered a great variety of fields. And many of them involve questions like welfare economics and factor-price equalization; turnpike theorems and osculating envelopes; no substitutability relations in Minkowski-Ricardo-Leontief-Metzler matrices of Mosak-Hicks type; or balanced-multiplier under conditions of balanced uncertainty in locally impacted topological spaces and molar equivalences".

Table 3. Two contrasts of knowledge tool kits: medicine and business

Decision issues	Medicine	Business
Diagnostic approach	Heart rate, breathing, ultrasound, MRI, angiography	SWOT-PEST, cashflow, ROI, five forces, business model
Action/learning	Implants, surgery, endoscope	Exploitation of assets-yields, internal processes, technology diffusion, time-based competitive positioning
Life sustaining	Dialysis, pacemakers, intensive care, life saving drugs	Lean production, ecommerce, radical transformation, re-branding

Despite warnings by respected academics like Mintzberg (2004) or Pffefer and Fong (2002) about over-specialization, the status quo now operates with a new external threat, the digital age. While the industrial revolution was a three-for-one convulsion – technological via new inventions, machinery investment replacing physical labor, and entrepreneurial flare for successes of tomorrow (Bresnahan, 2010), the digital paradigm is also three-for-one – transforming societies and industries with three currencies: ideas, intellectual capital, and innovation. Firms such as Amazon, Apple, Facebook, and Google are offering prospective employees a free world-class education taught by leading practitioners in the fields of engineering, computer science, and artificial intelligence, stipends, and employment to study, train, and work at their facilities. Are business schools wedded to a 20th century curriculum?

DISCUSSION AND CONCLUSION

Business schools as professional communities have raised the role and importance of 'management as a technology', a vital performance factor for productivity and economic growth (Bloom et al., 2016). Few studies address the internal workings of faculty research and the interaction with faculty and students. An exception is Schwab and Starbuck (2016, p. 171), who describe why Carnegie's GSIA was such an exceptional intellectual innovator, when faculty and students met daily at 3 pm "to discuss what new ideas would make business education and research more scientific":

The social system at GSIA illustrates how frequent interaction and the right kind of cultural support can create successful radical innovators out of professors and students who might have been conventionally successful in other environments. Emotional support from colleagues helps innovators to persist in their efforts, and social interaction encourage people to venture into ideas that are more radical. Familiar colleagues can challenge proposals in supportive tones than make new ideas more complete and strengthen them for external exposure (p. 171).

This two-speed economy is arising with a new paradigm, a contrast to the industrial economy, based on general purpose technologies. Silicon Valley is the vocabulary of this digital paradigm, transforming management and advanced applications in genetics, and smart machines like drones and smart phones, robotics, artificial intelligence, and the Internet of things. New interdisciplinary fields like cognitive science integrate research from medical science, engineering, and psychology (Wilson, 1999), requiring fast-thinking, fast innovation, and global reach. As suggested in Table 2, do business schools fit the industrial paradigm but not the second?

Such trends illustrate the tradeoffs in professional schools between academic rigor and legitimacy, where a rigorous accreditation by external auditors assess faculty, courses, and the curriculum. Without accreditation, the medical and engineering graduates are not accepted to work. The same approach impacts business schools. Both the Florida-based AACSB (Association to Advance Collegiate Schools of Business) and the EFMD (European Foundation for Management Development), provide accredita-

Source: Authors' analysis.

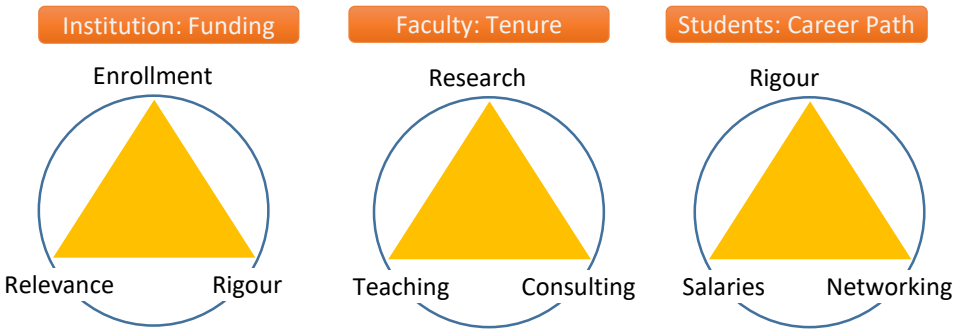

Figure 5. Alignments and tradeoffs in business schools

tion as a paid service, a useful benchmark for recruitment and a learning exercise to discern strengths and weaknesses. As shown in Figure 5, for 14,000 business schools worldwide, the biggest challenge is the level of funding. Paradoxically, as public funding decreases, business schools are becoming more capital-intensive, not just for buildings and office support or accommodation, but also for computer labs, on-campus incubators, a financial barrier for smaller. Clearly, business schools are looking private support from donors, often alumni, to finance endowed chairs, research institutes, and even selling the naming rights for the school.

Business schools face the challenge of managing three concurrent alignments, based on key stakeholders: the university (and the public at large), the faculty, and the students. The popularity of management and business, not only for undergraduate as well as graduate students, makes business schools a destination for enrollment, a possible time lag outside Europe and North America when, as Bennis and O'Toole (2005) argue, "… in many universities, 'B schools' were the primary loci of multidisciplinary research. That intellectual ferment and cross-pollination helped make business schools the hugely popular institutions they are today." Increasingly, they face compelling tradeoffs – academic rigor vs. relevance for management practices. Many individual faculty with preferences for tenure may emphasis research and publishing in top-rated journals, and far less on teaching or working to improve conditions for local enterprises.

While the US model receives the lion's share of media attention, and serves as an academic benchmark worldwide, other models are in play, not only in Europe but in leading countries in Asia. According to the Times Higher Education 2016–2017 ranking of the most international universities, only nine US universities stand out in the top 50: MIT (22), Harvard (33), Stanford (36), Princeton (37), Columbia (39), Georgia (41), John Hopkins (45), Perdue (46), and Chicago (50). The top five come from four countries – Switzerland, Hong Kong, Singapore, and the UK – and portend trends for international collaboration for teaching and research.

Similar changes are occurring outside North America, where institutional histories vary, such as the programe grandes écoles offering a master's degree in France, or stand alone business schools like INSEAD in France, ranking first in the Financial Times Global 100 business school survey, with campuses in Singapore and San Francisco, or the Lorange Institute in Zurich, with an ownership partner with CEIBS in Shanghai. Top-ranked US business schools are developing strategic alliances in Europe and Asia, just as European offer joint programs outside their own geography – Maastricht, for example, has twenty-eight MBA offerings in Africa, Asia, and the Middle East. More schools are specializing by industrial sector (e.g., sports management, fashion, tourism and energy) and offer courses online, following the leadership of the UK's Open University one of the largest business schools by student enrollment anywhere. As one study noted (Fernando & Thomas, 2011), some schools have transformed themselves from a strong regional base to being internationally competitive, citing examples like IMD in Switzerland, INSEAD in France, and LBS in Britain.

The question remains: what is the success track for business schools in the future, especially those not ranked in the top 50 of the various rating agencies. A pessimistic view is that business schools are caught in an institutional competency trap, where leadership style has a currency of inertia, a political process among key stakeholders and short-term adaptation, and limited strategic capacity to promote innovation and continuous change. The second view is more optimistic, based on a collective leadership model that is transformational, a form of strategic capacity for incrementalism, where innovations occur annually within a long-term strategic framework. Clearly, not all schools fit this model, but evidence is widespread via innovative hiring, program activities, and international alliances overcome the perils of a lock-in model of weak academic rigor, the publications ratings game, and lack of relevance for key stakeholders. Is the reality a case between the optimistic and pessimistic views?

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