

A Qualitative Approximation

How do World Class Research Universities Trigger their Performance?

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Abstract

This Qualitative approach, pursues the detection of the World Class Higher Education Institutions (WC-HEIs) common success denominators, by evaluating their general politics, strategies and academics enhancement procedures, in order to describe their ascension on the International Academic Rankings.

On the other hand, this document aims to extend the Phillip Altbach and Jamil Salmi analysis, defined as “The Road to Academic Excellence: The Making of World Class Research Universities”, with the use of new inputs and outputs that support and reinforce their criteria towards the need of a continuous research stimuli across the Higher Education Institutions (HEIs) Key Performance Indicators for a competitiveness heightening.

Key terms of the Investigation: World Class Performance, Higher Education Institutions, Research, World Class Denomination/Ranking, Key Performance Indicators (KPI's).

Investigations Objectives

Main Objective:

The determination of the WCR-HEIs core features towards performance enhancement across the International Academic Landscape.

Secondary Objectives of the Investigation:

- The description of the HEIs contemporary challenges and scenarios towards the achievement of new competitiveness standards.
- The detection of the WC-HEIs most sensitive performance indicators.

Investigation Methodology:

It is worth mentioning that this project is developed by phases, where each phase depicts a specific research product:

- I. The first phase describes the Theoretical Background exploration upon the topic.

- II. The Second Phase examines the 11 World Class Higher Education Institutions, undergone by Phillip G. Altbach and Jamil Salmi, in order to evaluate the key processes and strategies (bonded to the Human Resource strengthening) that lead to their newly acquired standards.
- III. The 3rd phase describes the World Class categorization and contemporary standards.
- IV. The 4TH phase resumes the description of the KPI's triggered by the World Class Universities in order to boost a research culture along Universities Personnel and alumni.
- V. The 5th and final phase refers to the conclusions and scientific explanation of the phenomena occurred along the Higher Education Institutions (HEIs) in study.

It is worth mentioning that this extension of the Altbach analysis, captures the experiences and strategies adopted by 11 World Class Research Institutions, that are highly ranked and recognized worldwide:

1. The Shanghai Jiao Tong University
2. Ibadan University
3. Pohang University of Science and Technology
4. University of Chile
5. Pontifical University of Chile
6. Indian Institute of Technology
7. Hong Kong University of Science and Technology
8. University of Malaya
9. National University of Singapore
10. Monterrey Institute of Technology
11. Higher School of Economics

By analyzing the experience of 11 world class research universities with a common framework, allows the investigation to be enriched by a real life testing compilation of 3 set factors: Talent, Funding and governance.

Introduction:

“In the past decades, the term world class university has become a catch phrase to describe research universities at the pinnacle of the tertiary education hierarchy. However... the paradox of a World Class University relays on the fact that everyone wants one, no one knows what it is, and no one knows how to get one” (Altbach & Salmi, 2011). In the past, the elitist entitlement of a HEI as a World Class entity, merely depended on a subjective evaluation, based on the HEIs common reputation and the employers perspective towards the World Class University Graduates, etc. Nonetheless... there are still no rigorous measures to quantify the inputs and processes that lead to a superior educational academic excellence/performance in terms of training top graduates, producing leading edge research and contributing to the industries dynamic acknowledgement demands (Lewis, 2006).

It has been clear that the hierarchy of academic values and general progress... connotes the great significance of research among the HEIs that rank on top of the international scales, where despite their complexness, size, funding, autonomy, etc. their educational approach chases

the road to academic excellence, through the pursuit of the investigational skill strengthening (Bak, 2006).

“Through time, the strict evaluation of the HEIs performance along particular matters, lead to the development of specific metrics, defined as “International rankings” who immediately drove the attention of the global scholar community, with a dramatic impacts across the HEIs culture (Altbach & Reisberg, 2010). It is worth mentioning that the first approaches towards a University’s competitiveness, were held along the US tertiary academic context (Atkinson & Mayo, 2010).

In the past few years besides the traditional national ranking held by the United States for their private and public HEIs, the proliferation of International league tables/scales in other countries, has grown to the point where the results in these nations were sometimes dismissed by flaws; boycotted or challenged legally by some universities, that were affected by the results and sometimes used by political opponents as a convenient way to criticized a specific government party (Atkinson & Mayo, 2010).

Parting from the above, the world class HEIs have proactively responded to these phenomena with concrete actions by creating their individual academic indicators, reinforcing and stimulating their own research cultures among their HEIs, where a clear example of these phenomena derives from the: “Excellence Initiatives” lately adopted by: China, Denmark, Germany, North Korea Republic, Spain and Taiwan among others in terms of investigation and Higher Education Internationalization (Yusuf, 2010).

What is a World Class University?

Currently, there is no formal or standard definition of a world class university, however the general concept of a world class university is commonly managed in accordance to a widespread agreement of a world class reputation—that refers to the most recognize international rankings. Nonetheless, the lack of an absolute set of performance criteria and measures may mean that the world class categorization will always be positional, referring to those universities that are at the top in terms of academic reputation rather than those that truly fit a class of standards (Grunig, 1997).

Parting from the above, one may infer that by the fact of positioning at the top of the international academic rankings, is no warranty for a World Class fulfillment or categorization, instead... it is of great importance, to revise the HEIs strategies, processes and individual characteristics in order to certainly state that a tertiary institution is embracing a world class enhancement (Hattie & Marsh, 1996).

The Benefits a Rigorous Research Culture

The Achievement of a world class status requires a university to possess a series of competitive advantages over the others HEIs, were elements such as: A strong Organizational Tradition, A significant amount of resources and a supportive environment, may lead to a specific point of break in ones understanding of Why the World Class Universities are concentrated in the developed countries? Who possess a relatively long modern university history, a nurturing environment of abundant resources and a fixed academic freedom, that could be of no surprise that most of the world class universities outside the US, with only a few exceptions, are public institutions (Lee, 2000).

Thereby, the impact of the World Class Universities around the teaching and research activities are closely monitored and tracked by the leading academic organizations that are on a

constant pursuit of competitive strategies, that eventually boost their academic positioning and financial resources within a worldwide framework. Now a days, policy makers and institution managers refer to global benchmarks that have proven to support and strengthen the universities affordability by making them more competitive among their peers and more attractive to students, academic staff members, researchers, employers, funding bodies and eventually industry talent hunters.

Parting from the above, it is of great importance for this investigation to evaluate the World Class HEIs from 3 perspectives:

Talent, Funding and Governance.

Talent:

Through the exploration of the 11 case studies contemplated in the Altbach and Salmi study, one may infer that along the success factors in building a top research university in terms of talent are: the ability to attract, recruit and retain leading academics. Notably what truly distinguishes the World Class Research Universities; particularly the East Asian Universities from the rest of the world is their marked emphasis on internationalization. Where they significantly increased the percentages of the courses taught in English, with the dual purpose of attracting foreign academics and gearing the curriculum towards training students (Altbach & Reisberg, 2010).

In these matters, It is of great importance to describe the outstanding efforts of the Shanghai Jiao University (China) and the Pohang University of Science and Technology (Republic of Korea), were they took the strategic decision to rely on their finest Chinese and Korean academics, who were sent to be trained in the best universities in North America /Europe and then directly absorbed by their different faculties (Liu & Li, 2005).

The Salmi assumption of talent procurement as a key driver to academic success, also requires a second dimension of quality control of in terms of their incoming students, where the Indian Institute of Technology, demonstrated to possess the most competitive strategy of the 11 HEIs evaluated; Where their academic strategy was based upon a greater acceptance barrier, to the point where its rate went down to a 1.6% (608 applicants for each place) were if compared with the all-time low acceptance rate of the Harvard University (6.9%) is pretty significant (Altbach & Salmi, 2011).

Another fact to evaluate, related to the talent hunting is the HEIs specific monitoring of their graduate alumni and their specific weight on the job market, defined by private and public corporations, in accordance to professional's performance on their working ambience (revise Table No 1 below).

Parting from the table above, it is of great importance to state the great demand and prestige that the Indian Institute of Technology-Bombay has among the industrial talent, either locally or internationally around specific Science, Technology, Engineering and Mathematics (STEM) programs (Davenport, 2010).

It is said that "Global Competitiveness derives from education" and that "In times of drastic change, it is the learners who inherit the future, were the learned usually find themselves no longer equipped to live in a world that no longer exists. Nonetheless... if the learned are not properly upgraded or strengthen within the contemporary challenges their performance won't be able to significantly diminish" (Hoffer, Reflections on the Human Condition, 2006).

Where the importance and transcendence of the best Human Resource (HR) and recruitment relays on the HEIs internal politics and processes towards an efficient internationalization of the Tertiary Education.

Table No 1, The Importance of Graduate Students along the 11 HEIs studied

Institution	Graduate Students %
Indian Institute of Technology-Bombay	58
Pohang University of Science and Technology	55
Shanghai Jiao Tong University	42
Ibadan University	37
Hong Kong University of Science and Tecnology	36
University of Malaya	33
National University of Singapore	23
Higher School of Economics	15
University of Chile	15
Monterrey Institute of Technology	14
Pontifical Catholic University of Chile	13

Source: Jamil Salmi and Phillip Altbach, "The Road to Academic Excellence: The making of World Class Research Universities", The World Bank, 2011.

Funding:

In terms of funding, the findings of the case studies on this analysis, confirm that the emerging research universities need to be well resourced to progress rapidly. This fact was clearly represented by the east Asian cases, as well as from the comparison between the National University of Singapore (NUS) and the University of Malaya. The main reason behind the NUS great success is due to its overall ability to spend, year after year after year 2 to 3 times as much per student as the latter.

As expected, abundant funding is indispensable, not only for setting up the first rate facilities and an appropriate physical infrastructure, but also for attracting and retaining their high level academics. The comparative data shown on table No 1, unequivocally reflects that the top performers in the rankings among the HEIs included in this research, also present the highest levels of student funding per year, ranging close to 40,000\$ USD in the case of the National University of Singapore to 70,000\$ USD for the Pohang University of Science and Technology (revise table no 2).

The HEIs access to a partial aid from their local government marks a pronounced gap around the funding alternatives that allow the academic organizations to provide an upgraded and up to date education; nonetheless it is of great importance to recognize that in this times they should aim to a stronger relationship with the private sector, in order generate a sustainable environment and a greater independence from the government funding (Bak, 2006).

Governance:

The case studies, which analyzes a number of positive and less favorable governance situations, reveals that an appropriate regulatory framework, a strong and inspiring leadership and an adequate HEI management, directly influences the WCRU's ability to prosper (Altbach & Salmi, 2011).

By bringing up the cases of the private Universities on this study: The Pohang University of Science (PUS), The Pontifical Catholic University of Chile (PCUC) and The Monterrey

Institute of Technology, which have enjoyed from an elastic and greater autonomy than the public Universities in Asia and America respectively. It is worth mentioning that despite their private status the PUS and PCUC have obtained a slight share of direct public funding, due to their great credibility and internationalization processes which enables them to obtain great success on their funding races. Nonetheless the key dimensions of autonomy brought out of the case studies include the ability to mobilize a significant additional funding form a variety of nonpublic sources; to provide attractive remuneration packages for top academics and to boost the international nature of the institution in terms of program content, language of institution and focus of the research (Altbach & Reisberg, 2010).

Table No 2 Funding Characteristics of each Institution

Institution	Number of Students that Graduate	Share of Direct Public Funding	Annual Budget (USD)	Per Student Expenditure
Indian Institute of Technology- Bombay	12,000-28,000	70	123 million	\$ 4,400.00
Pohang University of Science and Technology	1,700-3,100	15	220 million	\$ 70,000.00
Shanghai Jiao Tong University	14,000-43,000	40	700 million	\$ 16,300.00
Ibadan University	7,382-19521	85	46.7 million	\$ 2,390.00
Hong Kong University of Science and Technology	3,302-9,271	63	267 million	\$ 28,850.00
University of Malaya	8,900-26,963	60	272 million	\$ 14,000.00
National University of Singapore	6,300-27,396	58	1.37 billion	\$ 39,000.00
Higher School of Economics	2,400-25,705	33	45.5 million	\$ 2,843.00
University of Chile	4,569-30,702	11	520 million	\$ 17,000.00
Monterrey Institute of Technology	3,600-25,705	0	1.15 Billion	\$ 10,200.00
Pontifical Catholic University of Chile	2,806-22,035	11	453 million	\$ 20,500.00

Source: Jamil Salmi and Phillip Altbach, "The Road to Academic Excellence: The making of World Class Research Universities", The World Bank, 2011.

One of the ways in which purposeful leadership manifests itself is through the talent of articulating an enticing vision for the future of the institution to all its stakeholders. Nonetheless, good salaries are not enough to attract and motivate high-performance academics, faculty members must feel that they are part of a significant project to ensure their full commitment towards the construction or renewal of the institution (Hoffer E. , 1973).

The Transcendence of a Healthy Research Environment

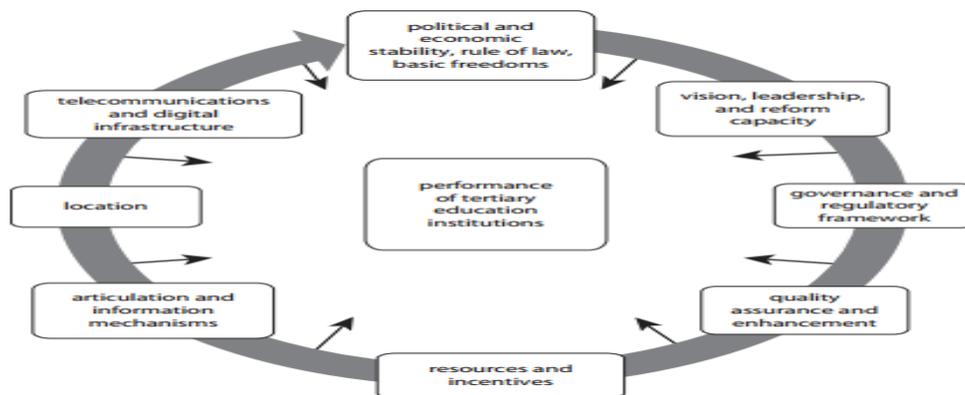
In general terms, it is worth to infer that most of the outstanding World Class Research Universities operate in a collaborative manner with other HEIs, nor do they achieve their significant success by adopting a secluded position along the academic ecosystem. A common thread across the case studies surveyed on the Altbach and Salmi manuscript, unveils that the WC-HEIs alone are not sufficient to understand and appreciate the full dynamics of their relative successes or failure, parting from the fact that the analysis requires a specific point of comparison, in order to determine, whether the key forces at play resemble a facilitating or constraining effect (Salmi & Alenoush, 2007).

Parting from the above it is worth mentioning that now a days the performance of a HEI and their conversion towards a WC-HEI relies upon 8 pillars, where each of these components

presents different sensibility range and particularity towards the gathering of superior results and positioning on the international academic rankings (Altbach & Salmi, 2011).

On figure No 1, one may appreciate the 8 Pillars that trigger or impact directly over the procurement of superior WCR-HEIs performance or the conversion from an average HEI to a WCR-HEI.

Figure No 1 The Understanding of the KPI's of the WCR-HEI's that trigger performance



Source: Jamil Salmi: The Road to Academic Excellence: Lessons of Experience, 2011, World Bank, Pg. 336

Table No 3 below, describes each specific pillar, which may boost the academic tasks required in order to upgrade a specific HEI area of interest. On the other hand, It is said by various scholars that each of this pillars represents the HEIs Key Performance Indicators (KPIs):

Table No 3 A WC-HEIs KEY Performance Indicators (KPIs) brief description

HEIs Ecosystem KPIs	KPIs Description
Macro Environment	The Overall political and economic situation of a country together with the rule of law and the enforcement of basic freedoms that stimulate the governance of the tertiary education institutions
Leadership at the National Level	The existence and vision of a strategic plan to shape the short, mid and long-term future of the tertiary education institutions
Government and Regulatory Framework	The government structure and procedures that determine the autonomy levels of the Tertiary Education Institutions (TEI's)
Quality Assurance Framework	The TEIs endogenous setup that secures and enhances the quality of research, teaching and learning
Financial Resources	The absolute volume of monetary sources available in order to fund the TEIs operations
Articulation and Information Mechanisms	The links and bridges built between the TEIs and the High School pathways in an integrated and coordinated pattern
Location	The quality of economic, social and cultural characteristics that determine the ability to attract scholars and talented students
Digital and Telecommunications Infrastructure	The ability of broadband connectivity and end user devices to support the delivery of educational, research and administrative services of TEIs in an efficient, reliable and affordable way

Source: Jamil Salmi: The Road to Academic Excellence: Lessons of Experience, 2011, World Bank, Pg. 336

Conclusions Obtained:

The World Class entitlement to a Higher Education Institution is still considered to be a subjective process, despite the various international efforts that along their scales... pursuit a trustable classification and academic allocation of these organizations.

On the other hand it is worth mentioning that through the theoretical exploration and experience recognition of 11 highly ranked universities, based on the Phillip Altbach analysis, one may infer that the best mean towards an academic boosting is a result from the strengthening of the organization's research culture (across the professor and alumni on campus).

Parting from the above, when describing the HEIs contemporary challenges and scenarios towards the achievement of the new competitiveness standards, this analysis has concluded that the attainment of a healthy academic environment requires the reinforcement of 3 main pillars: A meticulous talent procurement process, a proper resource funding and academic governance.

Despite the fact that the Altbach and Salmi analysis proposed 8 academic Key Performance Indicators (KPIs) for the HEIs upgrading, it is great importance to mention that out the 8 KPIs previously mentioned, on this research the most sensitive KPIs were proven to be the following:

1. Government and Regulatory Framework,
2. Quality Assurance Framework
3. Financial Resources
4. Articulation and Information Mechanisms

Finally, it is important to outstand that the most pronounce world class characteristics around the universities in study:

- I. High demands and requests towards the alumni acceptance
- II. High standards towards the professors attainment.
- III. The need for sustainable research programs that require a leaner portion of the public funding, thereby, granting the universities with a greater financial autonomy towards its strategies.
- IV. Greater articulation with other universities through their internationalization politics.

Theoretical Background:

Altbach, P., & Reisberg, L. (2010). *Trends in Global Higher Education*. Rotterdam, Netherlands: The Netherlands Sense.

Altbach, P., & Salmi, J. (2011). *The Road to Academic Excellence The Making of World Class Research Universities*. Washington DC, US: The World Bank, Directions in Development Human Development.

Atkinson, R. D., & Mayo, M. (2010). *Refueling the U.S. Innovation Economy: Fresh Approaches to Science, Technology, Engineering and Mathematics (STEM) Education,*". Cleveland, US: The Information Technology & Innovation Foundation.

Bak, H.-j. (2006). Commercialization of Science and Changing Normative Structure of the Scientific Community. *Korean Journal of Sociology*, 40(4) 19-47.

Davenport, T. H. (2010). Analytics at Work: Smarter Decisions, Better Results. *Harvard Business Press*, vol. 38 no. 3, pp 15-22.

- Grunig, S. (1997). Research, reputation and resources the effect of research activity on perception of undergraduate education and institutional research acquisition. *Journal of Higher Education*, 33 (9), pp9–14.
- Hattie, J., & Marsh, H. (1996). The Relationship between Research and Teaching: A Meta-analysis. *Review of Academic Research*, 66(4) Pg 507-542.
- Hoffer, E. (1973). Reflections on the Human Condition. *New York: Harper & Row*.
- Hoffer, E. (1973). Reflections on the Human Condition. *New York Harper and Row*.
- Hoffer, E. (2006). *Reflections on the Human Condition*. US: Hopewell Publications.
- Lee, K. (2000). *From thrid World to First: The Singapore Story 1965-2000*. London, UK: Harper Collins.
- Lewis, H. (2006). *Excellence without a Soul: How a great University forgot Education*. New York: New York Public Affairs.
- Liu, C., & Li, J. (2005). Strategic Development of Higher Education. *Education Development and Research*, 3, 94-96.
- Salmi, J., & Alenoush, S. (2007). League Tables as Policy Instruments;Uses and Misuses. *Higher Education Management and Policy Journal*.
- Yusuf, S. (2010). *Technological Catch Up to Innovation: Thr Future of China GDP Growth*. Washington DC. US: The World Bank.

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