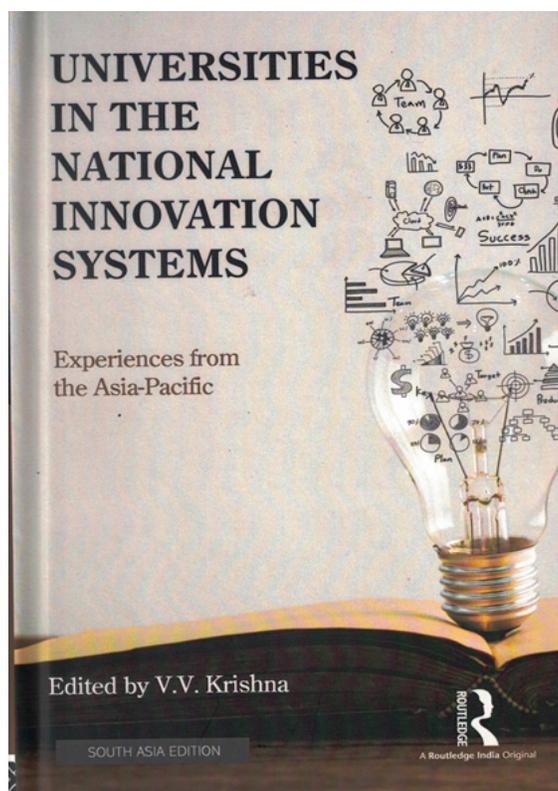


Universities in the National Innovation Systems: Experiences from the Asia-Pacific



Universities in the National Innovation Systems: Experiences from the Asia-Pacific.

By

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The Book attempts to contextualise the role and missions of universities within the National Innovation systems using a range of experiences from the Asia-Pacific. It begins by outlining the historical evolution of universities as centres of Learning and excellence providing an account of what the author characterises as three revolutions, however discernible. This perhaps pays lip service to the rich standing of the author in the Sociology of Science. Firstly, the use of National Innovation Systems approach has its limitations beginning from the unit of analysis and the macro view based on fragmentary evidence and the dubious utility of input-output binaries. Thereafter, the underlying socialisation of knowledge that is needed for its documentation (or codification) or

reduction to practice is given an unfair burial. It totally fails to outline the dynamic at the micro and meso level for the reader and the scholars interested in this field. It leaves them with an understanding which is though empirically grounded very defective and lacks comparability, especially for the Indian case. My comments are to be seen in that light.

To many that would come across as the musings of an insider reflecting on the past glories of education, which provides no rational input or guidance to what lies ahead, except reminisce or despair why we don't seem to do anything positive and how other countries (Like those compared with through case studies) are doing. That said, one would have expected a more honest reflection on how things are currently and what factors influence the overall value that society places on education in science-related fields and disciplines at any given point of time. This expectation is on account of the author's long-standing involvement with his alma mater and his international engagements.

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The authors miss opportunities by offering a positive account of what education can do, without reflecting on what ails the modern education system, which would have been more suited to a critical view of these experiences. The insight into how McCauley's education system that brought a social regimentation worked differently in different contexts is cursorily referred to as the "prevailing political and economic context" of the birth of educational systems, without grappling with issues of democratising control over what and how to teach and its utility-instrumental or otherwise (p.4). It would have been another matter that some amount of self-reflexivity by the community of practice involved, namely academia could have led to some constructive revelations, rather than lamenting the low expenditure on research and development, which is a theme developed in the first Chapter. It is another matter that the capacity to do so in a country with competing priorities is at best resource constrained and at worst marred by the non-performance of any form of stimulus in creating the Innovation ecosystem.

Of course, this is a bucket list, which may not sit well with the neat picture of the other Asian experiences but for diversity's sake, it could have been undertaken. To infer strategies in such a deeply sociological context appears post-haste, as a means of rationalising what is otherwise a disoriented process, without contextualising how education remained a handmaiden of the powers that be and their view of society. At the Micro-level, it has led to the creation of structures and practices, which were never oriented to incentivise anything other than mediocrity. The authors sidestep all these realities to paint a picture that is positive and nothing more concrete and actionable. The oft-repeated themes of building technological capabilities through collaborations and the confluence of research and education in the institutionalisation of Universities do to my mind give an organic view of their alignment with the overall Innovation system- call it NIS but does not go any further. Given the discourse on tacit information underlying knowledge transfer, it appears fascious to discuss buzzwords, without reflecting on the contribution of the university in maintaining such processes. Discussing history as far back as Post war History submits to a nearly Eurocentric view of the World, save for the references to the Asian region like China, Taiwan, Korea. The author could have explored to what extent the status of latecomer economies is attributable to the educational system in terms of knowledge generation, transfer and diffusion. Particularly so, as he outlines the nub of the third revolution was the linking of knowledge transfer with economic development. There is an equally influential view that development has to be construed more broadly. His further accounts on the problems of other regions like China, in terms of quality of graduates, has been a historical and universal theme, which could have been reflected upon more, as to how this is not an impediment elsewhere, but in coun-

tries like India. Also, such macro views criticised in relation to firms and other actors, do little in outlining reality in the not for profit sector as well. Thankfully, the author does not mention the noble or moral nature of education to aggrandise the prospect these universities offer. The intimate functioning of these universities would reveal how knowledge generation has been subject to what is known as "Matthew Effect" and the authors could have reflected on how interdisciplinarity could enrich this discourse and in turn be informed by it. I am sure that proponents on the innovation system discourse would do well to recognise that the internal dimension of these universities would reveal more problems than the external dimensions being extolled about. The skilling dimension that is often quoted as supporting the role of higher education in these processes of capability building etc. does no more than proffer an instrumentalist account, which is a bit of a disappointment. The presence of other actors like vocational training Institutes has not been alluded to, let alone discussed as they provide the critical mass to absorptive capacity. I am unable to understand the specific areas of support that countries offered on operational areas and their linkage with the specific actionable mandates on collaboration and joint ventures, specifically the latter as it is a more of a formalist business mechanism. The inability of Indian Universities to take up an entrepreneurial role, coupled with their reluctance to commercialize innovations generated within their country shows that we have a long way before we can go so far as to collaborate. As trust is crucial to collaboration, it is nobody's guess how that is to be developed by primarily focusing on the real task of creating capabilities through whatever means available. The fact that Universities in our country do not inspire confidence both among the local constituency and the global networks alike is of course little wonder.^[1]

Results from an indicator-based study over the last decade and above conducted to demonstrate that despite the publicly funded nature of these universities, their presence in the collaborative networks in specific Industries and overall is dismal. The fabled alignment with economic development is, therefore, a non-starter of sorts. This over and above that the same is not aligned with meeting India's disease burden, in case of Pharmaceuticals is also no respite. Also, a view arises that alignment of industrialization with Public Goods like health, education, etc. is dismal and therefore ineffective. This is being stated because of the author's resort to such data overlooks the misalignments underlying. The limits of such quantitative data are not lost on the reader. To argue that this emerged from Freeman and his evolutionary view of Innovation systems is a bit of an injustice to the enduring promise of history and evolution as analytical toolkits. The theme of autonomy should have been contextualized more with regard to societal objectives, rather than a mere emphasis on privatization (p. 8). The role of ideology could have been fleshed out better. This

account extols imitation unduly in this regard, yet does not emphasize actual innovation ability, broadly or narrowly construed. If the role is seen limited to catching up and more specifically imitation, then there is nothing much to write about.

Firstly, the use of higher education enrolments to state a case for a scenario of growth overlooks the underlying dynamic evident from a more qualitative assessment. Pivoting each stage of education with a funding issue, in terms of public expenditure seems to be a case for overreach in a country like India. Despite funding, it is corruption and leakages, faculty shortages that mar infrastructure creation in Universities.^[1] The overall point on higher education is therefore not very markedly different from that of the education in general, which undermines a wishy-washy account of their growth as pivotal.^[2] Positioning publications as the sole metric for such an assessment of knowledge production still do not partake from the reality that universities are not built on entrepreneurial spirit, nor they are expected to or capable of enabling the linkage with economic development without giving rise to effective strategies for downstream commercialization. Further, the use of research intensity based on the gross domestic product has been criticized for it is the very ability of Universities to contribute in terms of economic development is in question. As a selection criterion and an analytical toolkit, it just supports the “putting the Hand where your mouth is” argument in a diffuse prescription. (p. 14-16). The human capital argument can be seen as the cause of bottom-heavy institutions with no measurable indices for the output they produce- a challenge that subsists despite the qualitative aspects discussed. To position the Universities for being the focus of policy mandates, without prioritizing technology transfer and incubation, spin-offs and start-ups seem like an exercise in futility (p. 16). The Triple Helix appears as a paradox in the Indian Context. The account on the newly industrialised countries, developed countries and emerging economies, etc. is a part respite, in terms of key themes emerging from the case studies like political economy and its influence (p. 17- 28), institutional focus, public support to science and technology using various specific contingencies. Chapter 6 on the Indian case at the outset seems to eulogise the adoption of teaching and research function simultaneously without outlining the constraints, it imposes on the strategic task of research. The author’s positioning of the National Innovation System, therefore, appears overrated in this context. (p. 154).

The use of supply-side indicators like gross Expenditure on research and development to situate actors and agencies in the National Innovation system analytically doesn’t address the self-generative capacity mandate and makes them more of policy recipients. Exactly why is the question not ventured into by the authors? The case for basic and applied research being in the public domain as a matter of strategic national

interest, which has been of long policy vintage, finds no mention here either (p. 155). The downplaying of private actors overlook their self-generative capacities which are perhaps the diktat of the flavour of the Book. The case of higher educational institutions, in terms of mushrooming universities and mindless expansivism, shows how the resource can add capacity, but actual performance and the trajectories of the same are to be developed by the entities themselves after a certain extent and not crutch on government support for day to day administration. The record on fake universities and the overall sorry state of affairs in the average Indian University Laboratory, of course, is something brushed under the carpet. The experiences of the users of the University system should have been taken for their attitudes, expectations, etc. and not merely mentioned in the passing as human resource constraint. (p. 156). The enrolment statistics outlined on p. 157 are not up to date and this present the comparability problem, which appears in many other places. Moreover, the breakup between private and public funded universities does not outline that all that the latter is supported by public support, whereas elsewhere it is based on the self-financing basis in large measure. The contestations as to how public funding cuts in education are proceeding in advanced countries too find no discussion, as a comparator. (p. 158). The comparison of Universities with publicly funded industrial research institutions has been avoided, in respect of publications and the scientometrics mentioned on pages 160-165 establish the broad point about concentration of research output in IITs etc. They do not, however, use collaborative patterns as a basis, because of their failure to establish knowledge transfer paradigms. The narrative on page 160 does not elaborate on the qualitative aspects of the publications like Impact factor, no. of citations, h-index, etc. The mention of top 5 private with data from 2013, appears dated and lacks comparability with the subsequent period for knowledge output starting from 2014. (p. 160). Further, it is unclear from entries, in respect of public institutions like Jawaharlal Nehru University and others with higher no. of average publications for the same period than private institutions as to how they fit into this narrative. It is a disappointment given the authors standing as alma mater and Faculty to not look in his own backyard. A similar instance in the private institutions is that of Shiv Nadar University, Shiksha’O’ Anusandhan University and Sharda University whose average no. of publications exceeds that of Banasthali University mentioned. There are repeated references to Maharishi Markandeshwar University, Haryana based on two periods, namely grant of recognition and before it (Table 6.5). The variation over a time period is perhaps lost in translation. The variation between the studies cited and the author’s compilation suffers from methodological problems. The use of enrolment statistics in tertiary education, have many data gaps and lack comparability over time in the Indian Case. This is,

however, progress over the patchy dataset that existed earlier but did not outline subject-wise enrolment to outline trends.

The conceptualisation of university-industry relations, in terms of sponsored research, consultancy, patents and spin-offs or start-ups clubs spill overs with a category like Patents focused on codification. This is counterintuitive even from a global value chain perspective on the impact of governance structure on the degree of explicit coordination and power asymmetry between actors in value chain types, where the complexity of the transaction, codifiability of information and supplier base capabilities are held to be influential in causing Upgrading. Coming from the proponents of socialization of knowledge production practices and social network analysis, it is a bit disappointing that collaborative aspects are discussed using bare numerics, as citation without so much as discussing their qualitative utility. The Little said about the creation of value and the processes, the better. The comparison based on a government grant for a quantum of consultancy projects undertaken by IITs enforces the resource endowment paradigm (Table 6.7). Placing these with transnational corporation R and D Centres and their links with IITs gives an additional dimension but somehow should have been contextualised. The case of other universities outlined in p. 160 could have broad-based his argument rather than focus on IITs alone. The divergences apparent in terms of collaborative output would have added another dimension, which is missing. The issue of monetisation of value from Patents is an enduring theme, although an aggregate view on cumulative growth does little to outline the number of other actors involved and the impact they make and comes across as a static account (p. 173-174). The error of treble counting the same institute of BITS, Pilani distorts the statistic (p. 174). Perhaps, the authors could have been served with better research analysts. The narrative on spin-offs should have discussed how desirable a development the trends in respect of IITs really are and do they outline the failure of a similar mandate elsewhere. The sectoral nature of this engagement is transposed to a National Innovation system level is another point. (p. 175). Secondly, the importance of universities as sources of knowledge from the survey presents some contradictions which the author should consider, as regards the importance of universities, as sources of knowledge and the reliance on manufacturing operations as a source of knowledge (p. 176). Similar is the case for university-industry cooperation, as regards the period when the degree of interaction was considered strong. The agenda on more informal means to strengthen the same seems to need some qualitative assessment which has been omitted. The argument on the flawed divide between government-funded science and technology labs and universities could have provided a moment of reflection as to their ability to contribute which is another missed opportunity. The conclusions do not thus embed in the reality of the University system much less their relations

with Industry. The economic integration element with industrial clusters and the informal economy is mentioned in passing which could have been engaged with deeply.

Chapter 9 studies the specific case of the National University of Singapore. It is no surprise that the key element is the second feature of the coupling of teaching and research with innovation and at the same time forging university-private sector links with various actors and agencies in the national system of innovation. However, the authors would do well to recognize that this is not their argument in other contexts about the meaning of Innovation from Oslo and Frascati Manuals. Also, the need for such networks and their collaborative manifestation in such a formalist epistemology itself certifies that Innovation is only done in Laboratories, which is not their refrain in the Indian Context. This goes to the root of comparability of such success stories. However, the case study demonstrates how locally embedded the university is within internal networks and how it leverages external alliances. As is rightly pointed out the implicit co-existence of Hobbesian and Marxist orientation in education is attributed to the importance of the social and economic value of specialised knowledge and its paramountcy to industrialization and capitalist structure (p.243). It is this realization that is never echoed in the Indian context citing ideology, which appears as fascious and idiosyncratic to the cause. The truth literally has a way of coming out. Economic functionality feted here is derided as instrumental preoccupation in the Indian Context. However, this discourse has unintended consequences to the authors' ideas, in as much as the role of foreign direct investment policy that they most criticize in a domestic context, appears to work as a well-oiled machinery there. This points to rent-seeking of a different kind perhaps which they do not dwell upon. It is this diffusion of focus on capital-intensive forms of industrialization and the daft discourse on the mobility of skilled personnel etc. that do not sit well with the socialization of high technology skills. (p.244). The knowledge economy that is shown to form around institutions basically doing their jobs properly without undue focus on resource allocation only undermines how resource constrained economies can pursue this task. The fact that a small island sized country does it better than a sub-continent is again no cause for happiness but despair. It only points to the quality of academics scaled up in the hierarchy of meritocracy and their intellectual laziness in doing innovation, because they are hyper-incentivised. The case study talks of institutions that "walk the talk" with concrete plans and deliverables, before crying about lack of resources, which most institutions in this sub-continent are prone to do. The case demonstrates that increases in gross R and D expenditure as a proportion of Gross Domestic Product in absolute or percentage terms cannot be criteria for comparability, given differences in size and structure of economic activity. This appears as an ideal type characterization of conscious efforts at insti-

tution led activity. The narrative on the role of the National University of Singapore in addressing societal challenges like water, environmental sustainability, etc. could have been elaborated more in relation to the overall narrative. This appears sketchy and piecemeal and appears disconnected from the other strategic initiatives of the University (p. 258). The concluding remarks on transitions from labour, skills, capital and technology-intensive phases to an era of knowledge intensiveness should serve lessons for others believing that the path from teaching to research orientation is the inevitably feasible one. The lessons outlined regarding internationalization, networking, multiculturalism are to be nuanced with the respective experiences of countries and cannot be tarred with the same brush elsewhere. (p. 263).

Chapter 15 presents the concluding synthesis from the case studies examined before. At the level of abstraction, comparing emerging economies with technologically advanced economies fails to provide comparability and does little except demonstrate a continuum of trajectories underlying them. The generalisations come across as sweeping. The combination of three missions of universities and the forms they take only obscures the fact of the dynamics that underlie each trajectory. Also, this takes no stance on the political economy either nor does it provide an outline, where the innovation lies in Institutional engineering. It is a reality that even the most prestigious institutions in India only end up offering the low hanging fruit of education that is gainless and incapable of operationalising the Innovative knowledge economy. It is only aspirational to assume quality education in scenarios riddled with resource scarcity and more importantly scarcity of ideas, other than massification of education. The creation of sector-specific educational systems means nothing if they do not tap into an economic opportunity on equitable terms. The over romanticisation of the university in an era, where the idea behind it is at stake leaves a bitter taste in the mouth. Those entrusted with delivering the goods have come and gone, but the enduring failure of Indian Universities to make a real mark socially is a consistent theme. The promise of higher education is at best a case of success having many fathers, failures having none. The entire success of combining teaching and research hints at putting your hand where the mouth is, yet at the same time it drives fatalism, rather than hope to alter the status quo. The excessive focus on so-called centres of excellence does not create cultures of excellence systemically, just sort of islands of intellectual self-ratifying chauvinism (read excellence) with nothing to match, in terms of performance. Despite some flashes of brilliance in collaborative linkages and consultancy, there is a lack of new modes of knowledge transfer and technology transfer and innovation that engages societally, at least within the University system in India. Citing Mertonian ethos, without realizing the infirmities our knowledge networks suffer from is a bit of an eye

wash. The equitable knowledge order is far from realized and the differences get starker. To fault commercialization and its attendant institutions is hypocritical in the absence of the provision of alternatives. Exactly how the myth of incubation and start-up mechanisms existing in the Indian context is a matter for far more serious reflection. The case for State Mediation in the face of ever-growing control over perceptions on science in media and other walks of Life as well as popular discourse seems like a cruel joke in the Indian context. Setting the terms of participation can happen only when Universities realise their social potential by not playing to populist short term temptations of just tapping successes, but also creating cultures of excellence on a system-wide basis. The social embeddedness of such institutions is an evolving and ongoing mandate. Even the most egalitarian efforts on this front require results to come from decentralized levels rather than in a top-bottom manner of a command and control economy. Citing the Bayh-Dole Act without examining what were the sources of opposition to it in the Indian context and why it cannot be operationalised elsewhere is a half-hearted attempt at blaming institutions, particularly formal ones (p. 407). Institutions cannot be targets of wish lists of difficult to do tasks, which do not engage the traditional or novel functions of Institutions in terms of ordering, signaling, incentivizing, yet implicitly involve allocation decisions without follow-up and accountability from actors in a decentralized way. Institutional design and experience have certain inexplicable idiosyncratic elements which defy easy answers. The point on University-Industry relations is outlined well but does not engage structurally with any problems/prescriptions with regard to human capital. In terms of knowledge production and research, far more rigorous benchmarking of outputs qualitatively is necessary. The inference on the relation between gross R and D expenditure, higher education R and D expenditure and scientific production create a false positive of sorts as far as India is concerned. The internationalization and globalization narrative appears subjectively jaded, because of how the structures of knowledge operate even in the Public University system in India, especially in terms of benchmarking. Economic valorization seems like the levelling factor in such networks and that reveals a lot about how other forms of benchmarking replicate social inequity. These fascinating modes of alternative market forms of governance are going to kick in once we overcome social idiosyncrasies and structural inequalities say the sociologists. None of that brilliance is evident from this discourse. The author does well to recognize that the importance of the role of Universities varies at different stages of a country's economy and the contingencies that so manifest them (p. 412-413). However, his narrative on the importance of supply-side factors and demand-side factors in an innovation system is ambivalent. The detailing of the comparison though on similar points like the need for higher

education policies are some pieces of the puzzle. It is, however, the Big picture that seems to be missing.

All in all, the Book outlines National Innovation systems with all their finery yet appears not very convincing. Call it angst, frustration or whatever you may like; this narrative could have focused on the despair our system invokes and address that, rather than making these self-deprecating comparisons with incomparables. This only shows how the theoretical framework and those who worked it have called it a day, as to its

explanatory power and potential for change. I find more satisfaction in angst than in this self-denial that ours is a situation beyond redemption. For the price, I would say it is a bit of a disappointment to the real promise and prospect of Innovation.

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