A Higher Education System for a Knowledge Society in Karnataka

Final report submitted to Karnataka Jnana Aayoga (Karnataka Knowledge Commission), Government of Karnataka by

Arkalgud Ramaprasad, Tejaswini Niranjana, Tanveer Hasan, Chetan Singai, Bhumika Dhanaraju
Higher Education Innovation & Research Application (HEIRA)
Centre for the Study of Culture and Society (CSCS)
No. 827, 29th Main Road
Poornaprajna HBCS Layout
Uttarahalli, Bangalore - 560061
Tel: +91-80-26423002, 26423266/67/68
Fax: +91-80-26323002
Websites: http://hecell.in, http://www.cscsarchive.org
November 20, 2012

Executive Summary

Karnataka's roadmap for a knowledge society envisages the inclusion, expansion, and excellence of institutions for creation, dissemination, and application of knowledge in education, health, agriculture, urban development, and rural development (Karnataka Knowledge Commission, 2011). To traverse the roadmap the state will need to map the system's aspirations, its current state, determine the gaps between the two, and develop strategies to bridge the gap. The objectives of this study are to:

1. Map the stated aspirations and ground reality of Karnataka's Higher Education System; and
2. Determine and analyze the gaps between the two.

We use an ontological framework (Ramaprasad 2011) to map the state-of-the-aspiration and the state-of-the-practice of the system. The aspiration of each institution was inferred from their vision statements, mission statements, objectives, Vice Chancellor's speeches and similar documents available on the website of the institutions. The data for mapping the state-of-the-practice were collected from a number of institutional and external sources. The internal sources of data were the institution's annual reports, IQAC (Internal Quality Assurance Cell) reports, AQAR (Annual Quality Assurance Reports) reports, magazines, brochures, orientation program material, convocation speeches, annual budgets, and newsletters. The external sources of data were the UGC (University Grants Commission), NAAC (National Assessment and Accreditation Council), rankings and surveys, selective online portals, ICSSR (Indian Council for Social Science Research), AICTE (All India Council for Technical Education), MCI (Medical Council of India), Association of Indian Universities, and NBA (National Board of Accreditation) established by AICTE.

The state-of-the-aspiration of the higher education system in Karnataka is rich but not ideal. In summary:

1. The aspiration of the higher education system is modest and varied, but not ideally balanced;
2. Its scope is rich and diverse, but not well distributed;
3. Its functions are appropriate in the aggregate and reasonably well distributed;
4. Its focus is varied but non-uniform and needs to be reassessed; and
5. Its outcomes are appropriate but their emphases skewed and need to be realigned to foster the development of a knowledge society.

Seen from the perspective of transforming Karnataka into a knowledge society, there is a rich diversity of institutions whose aspirations cluster in both predictable and unexpected ways, thus providing the basis for integrating a set of well differentiated institutions of higher education into Karnataka's knowledge ecology. Specialized and Comprehensive institutions are comingled in their aspiration, and so are Research, Private, State, Deemed, and National institutions. Such comingling can, on the one hand, be seen as the dilution of the institutions' mission and mandate; on the other, it may represent the evolution of the institutions and thus as an opportunity for integrating them into the knowledge ecology.

The state-of-the-practice of the higher education institutions in Karnataka is good and could be better. It is better than the public and media perceptions of the same. A major source of the misperceptions appears to be the weak projection of the institutional identity on the web, in the reports, and other sources of data. Part of this problem is reflected in the uneven data granularity. The problem is compounded by the lack of organization of the information in the various media which limit their accessibility, despite their availability.

The rich evidence, despite the difficulty of acquiring and organizing it, demonstrates significant (and sometimes unexpected) strengths and weaknesses.

1. The realization of the higher education system is modest and varied, but not ideally balanced, especially in the context of the global market for higher education.
2. Its scope is rich and diverse, but not well distributed.
3. The emphases on the Functions are varied and diverse, in the aggregate as well as within clusters of institutions. This differentiation of institutions is a strength of the system; their lack of integration could be a weakness.
4. The Focus is varied but non-uniform and needs to be reassessed. If one assumes that all the Focus disciplines are equally important for the development of a knowledge society, then clearly the state-of-the-practice is imbalanced.
5. The Outcomes are highly differentiated in the aggregate as well as by the three Functions. The differentiation itself is good but its effectiveness in the development of a knowledge society will depend upon their integration. Moreover the balance (or imbalance) between the different types of growth, their priority, and their sequence have to be debated and decided.

There are many performance gaps between the states-of-the-aspiration and -need on all dimensions of the ontological framework. Some of them may be desirable and others undesirable. In addressing the performance gaps one has to decide whether the aspirations themselves are appropriate – do they fit the need? Without a clear understanding of the needs of Karnataka to develop a knowledge society, the aspirations may be purely hypothetical or an arbitrary ideal. Tailoring practice to these aspirations may not be effective in transforming Karnataka into a knowledge society – one has to know the state-of-the-need.

We hope the maps serve as a mirror and not as an assessment or evaluation of the institutions and the system. We offer the maps as a description without any value judgment, and without any rationale or explanation for why it may be so. The institutions and the system have to debate these issues make judgments. As a mirror we hope that the maps provide feedback to the system and the institutions, and they in turn provide feedback to us if there are errors, inaccuracies, or missing details. If additional evidence will modify the maps we will incorporate the evidence in the knowledgebase and change the maps. An iterative feedback loop such as the above will help improve the quality of the maps and their understanding and use.

We recommend that the Karnataka government continue to maintain and develop the knowledgebase as the basis for evidence-based strategies to transform the state's higher education system.

Table of Contents

Table of Figures

Chapter 1 Introduction

Karnataka's roadmap for a knowledge society envisages the inclusion, expansion, and excellence of institutions for creation, dissemination, and application of knowledge in education, health, agriculture, urban development, and rural development (Karnataka Knowledge Commission, 2011). The legislative bill to create innovative state universities is a part of this roadmap (Government of Karnataka, 2011). To traverse the roadmap the state will need to map the system's aspirations, its current state, determine the gaps between the aspiration and the reality, and develop strategies to bridge the gap. Thus, the objectives of this study are to:

3. Map the stated aspirations and ground reality of Karnataka's Higher Education System; and
4. Determine and analyze the gaps between the two.

Previous Study

Karnataka is one of many states in India seeking to transform itself into a knowledge society – a society which recognizes the economic, political, and cultural value of knowledge (Bindé, 2005). It seeks universal presence, universal access, equity in access, empowerment and lifelong learning in such a society (Karnataka Knowledge Commission, 2011). To realize its vision it has to connect its diverse, traditional knowledge assets "and the new forms of development, acquisition and spread of knowledge valued by the knowledge economy model." (Bindé, 2005, p.17) It has to transform its knowledge ecology. The rapid growth of the information technology industry in the state has been a major impetus for the transformation. The state government has constituted the Karnataka Knowledge Commission (Karnataka Jnana Aayoga, ; Ramaprasad & Sridhar, 2011) on the lines of the National Knowledge Commission [of India] (National Knowledge Commission, 2006a, 2006b) to facilitate the same.

The report "A Study on Karnataka Knowledge Society" by Karnataka Jnana Aayoga presents a roadmap for developing such a society (Karnataka Knowledge Commission, 2011). The roadmap is encapsulated in the ontology in Figure 1-1.

The roadmap entails inclusion, expansion, and excellence (Stage in Figure 1) of institutions for creation, dissemination, and application (Process in Figure 1) of knowledge in the five sectors for the five outcomes. The report articulates many of the 225 combinations encapsulated in the ontology, three of which are illustrated at the bottom of Figure 1. The focus of this project is on university and university-like 'institutions' (highlighted in red in the figure) for creation, dissemination, and application of knowledge – the higher education system.

"The Karnataka State Innovative Universities Bill, 2011" (Government of Karnataka, 2011) is part of implementing the roadmap through a new type of institution. It seeks to expedite and provide for "restructure and establishment of certain universities in the State of Karnataka as Innovative Universities with more autonomy to these universities in the academic sphere through decentralization and separation of the academic and administrative functions. It also seeks to provide for greater flexibility in the academic and research architecture of the universities through facilitation of an inter-

disciplinary and multi-disciplinary approach and for the matters connected therewith or incidental thereto…." (Government of Karnataka, 2011) Mysore University and Karnataka University, the two oldest universities in Karnataka, have been designated Innovative Universities.

Stage		Process		Sector		Outcome	
Inclusion	[of institutions for]	Creation	[of knowledge in]	Education	[for]	Universal presence	[in a knowledge society]
Expansion		Dissemination		Health		Universal access	
Excellence		Application		Agriculture		Equity in access	
				Urban development		Empowerment	
				Rural development		Lifelong learning	

Illustrative combinations

Inclusion of institutions for dissemination of knowledge in education for universal presence in a knowledge scociety.

Expansion of institutions for application of knowledge in health for universal access in a knowledge society.

Excellence of institutions for creation of knowledge in agriculture for empowerment in a knowledge society.

Figure 1-1: Roadmap for Knowledge Society in Karnataka (Karnataka Knowledge Commission, 2011)

The Innovative Universities bill and the study on Karnataka Knowledge Society emphasize the role of the higher education system in the transformation to a knowledge society. Individual institutions can play a key role in the transformation; however, the transformation will be effective in achieving the desired outcomes of the knowledge society (Figure 1-1 rightmost column) only if the higher education system is transformed. Hence this project focuses on "Mapping the Higher Education System in Karnataka" as integral to the state's transformation agenda. The focus on the state's higher education system will help Karnataka align its strategy with the XII Five-Year Plan's proposed emphasis on state higher education plans (Planning Commission, 2011).

We propose the mapping of Karnataka's higher education system as a critical, symbiotic element of the state's transformation – a system which will nurture its knowledge ecology and be nurtured by it. In the following we start with a synoptic view of the knowledge ecology of Karnataka – the network of institutions which drive its knowledge society. We then discuss its higher education system and present a framework for mapping it.

Knowledge Ecology of Karnataka

The aims of a knowledge society are broad and diverse. It has to cultivate a knowledge ecology which fosters the generation and application of knowledge for the advancement of society through (a) research and discovery, (b) innovation and creativity, (c) education, learning, and the development of human capital, (d) cultural development and democratic values, and (e) services to and engagement with the society (Duderstadt, 2011). It has to make quality knowledge available and accessible to society

at large (Bindé, 2005). The education infrastructure of the society is central to realizing these aims as depicted at the top of Figure 1-2.

The ecology itself consists of interaction among seven sets of institutions. The axis of the ecology is universities and university-like institutions, colleges, and schools. State-run universities, other universities, university-like institutes/centers, and university-like corporate entities are at the top of the axis; colleges are in the middle; schools are at the bottom. Institutions for vocational education, cultural resources, informal education, and auxiliary education are also integral to the ecology. The subcategories of each and their approximate numbers where available are shown in the slide. The ecology is complex and evolving.

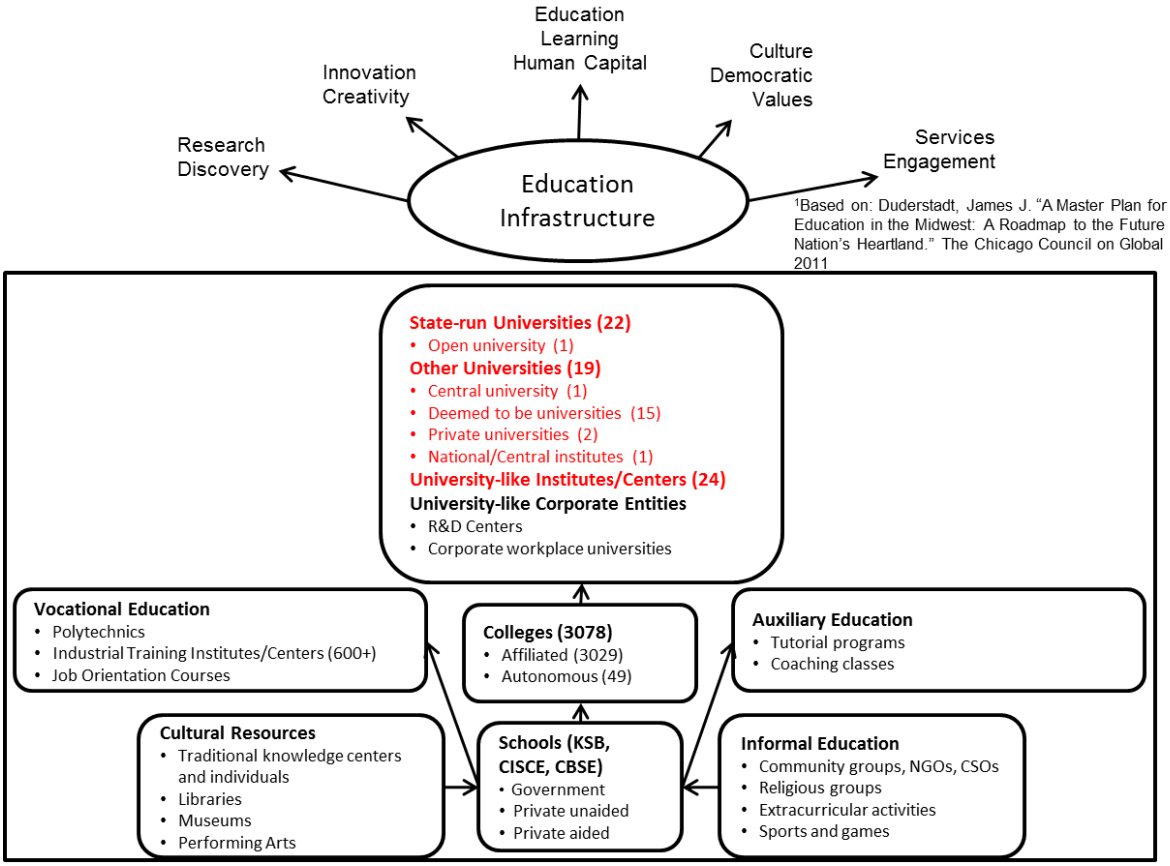


Figure 1-2: Knowledge Ecology of Karnataka

The higher education system in the ecology consists of the different categories of universities and university-like institutions, and colleges. These are highlighted by the red boxes. Note the very large number of institutions which constitute this system. There are more than 65 universities and university-like institutions, and more than 1228 colleges in Karnataka. This higher education system should drive the knowledge ecology and be driven by it.

The effectiveness of the knowledge ecology will be determined by how well its individual components are differentiated and integrated. For example, the schools, colleges, and the university system have to form an effective knowledge supply chain. The chain will be ineffective if he school graduates are not

college-ready, and if the college graduates are not employment-ready. Similarly, cultural resources shorn from the knowledge ecology will produce students who may be technically proficient but deficient in human values and ethics.

The Higher Education System

The higher education system is the engine of the knowledge ecology – it is central to the generation, dissemination, and application of knowledge. Its effectiveness will determine the success of the state's transformation to a knowledge society – hence the challenge to develop an excellent higher education system, not only excellent higher education institutions.

> "Only a small number of leading universities in a few countries can genuinely claim the status of "world class university". The focus of most higher education establishments is rather on strengthening their particular fields and their appeal to a very closely targeted student clientele. This is why these establishments must often try to meet a number of contradictory demands: to respond adequately to the "massification" of higher education while ensuring the quality of the degrees and diplomas offered; to establish quality control procedures that do not infringe on the academic freedom of teachers; to diversify courses while coping with a substantial decrease in public funding; to be autonomous while remaining responsible and civic-minded; and to combine research excellence with teaching excellence." (Bindé, 2005, p. 91)

Ideally, an excellent higher education system has institutions with highly differentiated but tightly integrated visions. It includes universities, colleges, trade schools, and training programs. These institutions are differentiated in their emphasis on research, education and service; their focus on the city, state, country, region, and the world; their specialization in the sciences, professions, vocations, arts, humanities, and religion; and their effect on the scientific, technical, economic, social, and cultural development. Yet they have to act in concert for the development of the society. They have to form a coherent, coordinated, albeit complex network to generate knowledge, store it, propagate it, and apply it to the development of society.(Bindé, 2005)

To call it a system is to emphasize their mutual interdependence and interaction with society; the institutions constitute a living system which drives the knowledge society. Its research innovations spawn new vocations – consider the explosive growth of computer related curricula and training programs. Social changes spawn new curricula and training programs in the system too – consider the emergence of nursing and fashion design.

A uniform system where all the institutions have to adhere to a common set of requirements will not result in the mix of differentiation (and integration) necessary to sustain the type of inclusive growth necessary in the states and the country. Uniformity will likely weaken the higher education system, not strengthen it. The state universities, the private universities, the deemed universities, and other university-like institutions while having different mission and in competition for the best talent should collaborate with each other to provide access to quality education to all equitably.

As a system it has to constantly evolve and adapt to the changing local and global environment. It is unlikely that such a system will evolve naturally from a few world-class universities. One has to design

and develop it. World-class universities are neither necessary nor sufficient for a world-class higher education system. Finland has a world-class higher education system but no world-class university; India has a few world-class universities but not a world-class higher education system.

There are currently no global benchmarks or criteria for an excellent higher education system. Yet, many are recognized as being excellent, if not the best, in different ways. They include the university system in California (even now, despite the budget crisis), the system in the USA as a whole, and the system in Finland mentioned earlier.

The concept of an excellent higher education system is new and evolving. Many countries and regions are conducting research to go beyond rankings of universities based on narrow, selective criteria related to research productivity to characterize the system as a whole based on their performance with reference to their mission. This research will contribute to that corpus and draw from it.

Karnataka's Higher Education System

Karnataka has a long and rich tradition of higher education. The erstwhile Mysore University is among the oldest in India. Institutions like the Indian Institute of Science, Central Food Technological Research Institute, and the Indian Institute of Management have a reputation in research and education that extends far beyond the boundaries of the state and the country. In the past few decades there has been an explosion of new universities and university-like institutions accompanied by a reorganization of the universities themselves. The challenge for a successful transformation into a knowledge society will be to weave the wide variety of universities and university-like institutions into an excellent higher education system which can compete with the best systems in the world in a global economy.

Every university and like institution need not be excellent in an excellent higher education system, but together they have to be excellent. Some may aspire to be in the ranks of the premier comprehensive universities of the world; others may seek a premier niche in the world; and yet others may simply desire to be the best in what they do where they are. Top quality research, education, and service need not be the monopoly of only the excellent universities and institutions – it has to be woven into the fabric of the state's higher education system to sustain the knowledge ecology. For such a system to drive Karnataka's knowledge society in the face of global competition it will have to balance its aspirations about (a) research, education, and service, (b) local, regional, national, and global problems, (c) vocations, professions, sciences, humanities, arts, and (d) economic, social, and cultural development.

This study focuses on the population of 65 institutions of higher education in Karnataka (Appendix A); it includes both traditional universities and other institutions of higher education. One of the primary reasons to include institutions that do not figure in the traditional list of universities and educational institutions was to make the list inclusive – to include all institutions which contribute to the state's knowledge ecology. Our understanding of the role of higher education institutions in the knowledge ecology would be incomplete without these institutions. The university-like institutions which have been included in our list play an important role in the formation of a sustainable knowledge base for the ecology. As will become evident later all these institutes have aspirations to contribute towards the

knowledge ecology and are doing so, as evident by their research (publications, patents, etc.), education (courses, programs, etc.), and service (professional, extension, etc.). Many of them have a different profile – contributing to the variation in and hence the robustness of the knowledge ecology. Last, these institutions highlight the geographical and social expectations and their strategic importance in the knowledge ecology of Karnataka.

Ontological Framework for Mapping Karnataka's Higher Education System

An ontological framework for representing the mix of vision/mission statements which make an excellent higher education system is shown in Figure 1-3 (Ramaprasad, 2011). The following description is based on that by Ramaprasad (2011).

The ontological framework is presented using five dimensions represented by the six columns shown in Figure 1-3 – the Aspiration dimension has two columns. They are, from left to right: (a) Aspiration – aspiration level of the institution, (b) Scope – geographical scope of the vision, (c) Function – functions of the university, (d) Focus – foci of the university, and (e) Outcome – desired types of development in a knowledge society. The Aspiration dimension has two components (columns) – the prefix article and the adjective. Together, there are eight possible aspirations. The five dimensions can be seen as five components of a higher education institution's vision statement. Later, in mapping the state-of-the-practice we will use the same ontological framework but label the Aspiration as Realization. (In the rest of the report we will capitalize the names of dimensions and the categories within. Thus Sciences will refer to the category in the Focus dimension/column; sciences will refer to the collection of science disciplines.)

The aspiration of an institution defines the reputation it seeks. We have used a simple four-level categorization of aspiration – premier, leading, advanced, and basic. In each category an institution may be the only one or one among many as connoted by the article preceding the adjective. The categories are subjective; there are no specific benchmarks to distinguish the three. In India, for example, the IITs and IIMs are considered to be premier institutes; the NITs are leading institutes; and there is a large number of other accredited degree granting institutions without a distinctive reputation which may be advanced or basic. An institution which is premier globally will also be premier regionally and nationally. On the other hand an institution which is premier nationally may be leading regionally or globally. Thus

Aspiration			[institution in the]	Scope	[in]	Function	[in]	Focus	[for]	Outcome	...evelopment in a ...owledge society]
The A/An	[+]	Premier		World		Research		Sciences		Scientific	
		Leading		Region		Education		Professions		Technical	
		Advanced		Country		Service		Vocations		Economic	
		Basic		State				Fine Arts		Social	
				District(s)				Humanities/SS		Cultural	

Figure 1-3: An Ontological Framework for Mapping Karnataka's Higher Education System

in specifying the aspiration it would be necessary to do so with reference to the scope. While the IITs and IIMs are premier institutes nationally they may be leading institutes regionally and globally.

The scope of an institution defines its geographical reach – how far its reputation extends, where its students are placed, where its students are recruited, where its services are provided, where its faculty is recruited, where their research is presented and published, etc. An institution's scope can be the world, a region of the world (Asia, Europe, Americas, Africa, etc.), country, state, or district(s) in the state. While geographical boundaries are getting blurred creating a global market for higher education, they have not disappeared and are unlikely to do so in the near future. They continue to play a role in the strategy of an institution.

The functions of an institution are represented by the three classic categories of research, teaching, and service. All higher education institutions emphasize the three functions but in different measure. These days research tends to get the greatest attention in the context of rankings and ratings; in some instances, especially in professional schools, teaching may get equal attention. While in the past the service role of a university has been relegated to third place, the recognition of its role in economic and social development is increasing the attention it is given. An important factor determining the attention given these functions is their role in revenue generation, especially in these resource constrained times. In the sciences, for example, research can generate significant revenues through grants and contracts; in the professions such as business, teaching can generate revenues through the large demand for their programs; and in some professions such as medicine, clinical service to patients can generate revenues. Thus, a complex set of considerations determine the emphasis placed on the three functions in a higher education institution.

The focus of a higher education institution may be the sciences, professions, vocations, fine arts, or humanities/social sciences. Many comprehensive institutions focus on all of them; the specialized institutions, often called institutes, focus on one of them or a subcategory within. The four categories differ in many ways – their emphasis on research, teaching, and service; their sources of revenue; their expenditures; their research productivity benchmarks; their sources of reputation; and, so on. Thus, the 'business model', if one may use that term, can vary significantly across the four categories. There can also be similar significant variations within each category. A vision of a comprehensive institution has to accommodate these differences – one vision will not fit all its foci. On the other hand, a specialized institute can have a singular vision corresponding to its focus.

The outcomes of a higher education institution may be scientific, technical, economic, social and cultural development in different measures. They represent the five primary types of development for the emergence of a knowledge society. An institution focusing on research in sciences may, for example, seek not only scientific development through their discoveries but also social development through the application of those discoveries. From the perspective of the society, the different types of developments have to be balanced to be sustained. Overemphasis on technical development to the exclusion of cultural development may be as dysfunctional as the obverse.

There are 3000 possible statements encapsulated in the ontological framework. These statements can be derived by concatenating a sentence left to right, choosing a word from each column and interleaving the word/phrase adjacent to the columns. Consider two such statements: (a) The Premier institution in the World in Research in Sciences for Scientific development in a knowledge economy, or (b) A Basic institution in the City in Education in Arts for Cultural development in a knowledge economy. The characteristics of the two institutions would be very different but both would be very relevant to a knowledge-based economy. An effective higher education system cannot have only premier institutions or only basic ones; it would have a balanced mix of the two and a selection from the other 2998 possibilities.

Using the framework we can paint a portrait of an excellent higher education system. It may have a few institutions which are 'The Premier institution in the World in Research'; a large number which are 'A Basic institution in the State/City in Education'; and many whose aspirations, scope, and functions are in between these two extremes. The institutions together extensively focus on the gamut of disciplines from the sciences to religion, and seek outcomes from scientific to cultural development in a knowledge economy. The portrait may vary depending upon the country, the culture, and the context. We will use it to map Karnataka's Higher education system as it aspires to be and as it is today, and to analyze the gaps between the two.

The ontological framework for mapping Karnataka's higher education system offers a number of distinctive advantages. It provides a way to describe an institution, and the system, using a set of structured natural language sentences, each of which is semantically valid – makes intuitive sense. Thus, while the encoding of an institution's vision statement using the statements concatenated from the ontological framework may not be identical to the original, one can compare the two semantically and establish their equivalence.

The large number of possible concatenations encapsulated in a very parsimonious framework provides the flexibility necessary to encode a wide range of institutions in the higher education system. Thus it allows one to map the parts (institutions) and the whole (the higher education system) systemically and systematically. As a consequence the system can be studied at different levels of granularity – one can study it at the institution level, an aggregation of institutions by different criteria, an aggregation of all institutions, etc.

The framework is extensible in a number of ways. New dimensions can be added to the existing ones; new categories can be added to the taxonomies within the existing dimensions; and new sub- and super-categories can be added to the existing dimensions. Thus the focus on the sciences, for example, can be sub-categorized into science disciplines for a finer understanding of the institutions and the system. Extending the ontological framework will increase the possible combinations exponentially, and consequently increase its complexity. Hence, any extension has to balance the benefits of ease of understanding and application of parsimony with the cost of increased complexity.

Many of these advantages are illustrated by the application in the next three chapters. Using these properties of the ontological framework we will seek to portray the complexities of the higher education system in Karnataka.

References

Bindé, J. (2005). *Towards knowledge societies: UNESCO world report*. Retrieved June 18, 2011, from http://unesdoc.unesco.org/images/0014/001418/141843e.pdf

Duderstadt, J. J. (2011). A Master Plan for Higher Education in the Midwest: A Roadmap to the Future of the Nation's Heartland. Chicago: The Chicago Council on Global Affairs.

Government of Karnataka. (2011). The Karnataka State Innovative Universities Bill. Retrieved June 20, 2011, from http://www.jnanaayoga.in/document/innovative_university/The%20Karnataka%20State%20Innovative%20Universites%20Bill,2011.pdf

Karnataka Jnana Aayoga. Retrieved August 30, 2010, from www.jnanaayoga.in

National Knowledge Commission. (2006a). NKC Note on Higher Education. Retrieved July 21, 2008, from http://knowledgecommission.gov.in/downloads/recommendations/HigherEducationNote.pdf

National Knowledge Commission. (2006b). NKC Recommendations on Higher Education. Retrieved July 21, 2008, from http://knowledgecommission.gov.in/downloads/recommendations/HigherEducationLetterPM.pdf

Planning Commission. (2011). Background Note for the First Meeting of the Steering Committee -- XII Five Year Plan.

Karnataka Knowledge Commission. (2011). A Study on Karnataka Knowledge Society (unpublished report).

Ramaprasad, A. (2011). Envisioning a world-class university system for India. International Journal of Technology Management and Sustainable Development, 10(1), 45-54.

Ramaprasad, A., & Sridhar, M. K. (2011). Empowering a state's development of a knowledge society. International Journal of Technology Management and Sustainable Development, 10(1), 11-25

Chapter 2 State-of-the-Aspiration of the Higher Education System in Karnataka

In this chapter we present a map of the state-of-the-aspiration of the higher education system in Karnataka based on the 65 universities and university-like institutions we studied. The list of institutions is in Appendix A and the rationale for their choice is discussed in Chapter 1. The chapter is organized into the following sections:

1. Data collection
2. Data coding
3. Data analysis and results
4. Discussion and conclusion

Data Collection

The aspiration of each institution was inferred from their vision statements, mission statements, objectives, Vice Chancellor's speeches and similar documents available on the website of the institutions. These were downloaded during the period May-June 2012. Of the 65 institutions 47 have explicit vision/mission statements. For 17 of the remaining 18, the other data were sufficiently rich to infer the vision/mission; for the remaining one institution the only data available was the description of the institution.

The full text of the above mentioned documents were downloaded and shared among the team members. The language of the documents is English in all except one institution; the lone exception was in Kannada.

All the vision/mission statements and many of the related documents do not have a date stamp. Since they were posted on the official website we assumed that they were the most current statement of the aspiration. We note that the present analysis is cross-sectional as of May-June 2012. However, changes to the institutions' aspirations can be incorporated continuously into the knowledgebase to provide an updated map as well as a longitudinal perspective.

Data Coding

The statements of aspirations vary considerably in format, length, content, and detail. The objective of coding was to construct a synthetic vision/mission statement for each institution using the structured language of the ontological framework. Following are two examples:

- University A
    - Original: "University A's vision is to be a world-class University that nurtures talent and catalytically transforms the lives of millions through excellence in teaching, research, service and community development. To uphold a commitment to shaping lives through scholarly teaching and learning, and that which contributes to an equitable and holistic transformation of society at large."

    - Synthetic: A leading institution in the world in education, service and research in sciences, professions, humanities, and fine arts for scientific, technical, economic, social and cultural development in a knowledge society.

- University B
    - Original: “To create a generation of human resources to successfully meet the global challenges.”
    - Synthetic: An advanced institute in the state/province in education, research, and service in humanities, sciences, and fine arts for social development in a knowledge society.

The synthetic statements, because of their common underlying structure, permit us to systematically compare, contrast, analyze, and integrate the states-of-the-aspiration of the 65 institutions.

The final synthetic vision/mission statement for each institution is based on consensus coding among the four team members. The consensus was reached through a three-step process:

- The 65 institutions were split approximately equally between two team members who constructed a draft synthetic statement individually.
- The draft statement was reviewed by one of the other two team members not involved in the initial coding and edited, again individually.
- The revised draft statements were reviewed by all four team members in the case of 35 institutions, and three team members for the rest 30 institutions to arrive at a consensus. The consensus was the product of face-to-face discussions and iterative. The participants went back and forth between the draft synthetic statements, the data, and occasionally the website to assure that the statements fully encapsulated the stated aspiration of the institution.
- The team also sought to capture the priority of the Function, Focus, and Outcome in the ontological framework based on the order of presentation of these items and their emphasis in the sources of data mentioned earlier. For example, some institutions were coded as ranking Teaching first, Research second, and Service third; others as Scientific Development first, Social Development next, and the other types of development not at all.
- Thus, the aspiration of each institution is coded as a row of data in a spreadsheet as shown in Figure 2-1 for University A and University B.

				Aspiration								Scope					Function			Focus					Outcome					
Name	Type	Breadth	Location	The Premier	A Premier	The Leading	A Leading	The Advanced	An Advanced	The Basic	A Basic	World	Region	Country	State	District(s)	Research	Education	Service	Sciences	Professions	Vocations	Arts	Hum./Soc. Sci.	Scientific	Technical	Economic	Social	Cultural	Synthetic Vision/Mission statement
University A	Private	Comprehensive	City 1				1					1					3	1	2	1	2		4	3	1	2	3	4	5	A leading institution in the world in education, service and research in sciences, professions, humanities, and arts for scientific, technical, economic, social and cultural development in a knowledge society.
University B	State	Comprehensive	City 2						1						1		2	1	3	2			3	1				1		An advanced institute in the state/province in education, research, and service in humanities, sciences, and arts for social development in a knowledge society.

Figure 2-1: Sample Coding of State-of-the-Aspiration

Data Analysis and Results

The objective of the analysis is to visualize the state-of-the-aspiration of the higher education system in Karnataka (a) in its entirety, and (b) stratified by the type of institution and the breadth of their mission. The results are presented as a series of graphical tables. We will present the 'big picture' first and then the stratified picture.

We also present the results of clustering (a) the institutions based on the attributes specified in the ontological framework, and (b) the attributes themselves based on the profile of the institutions in the sample. The results of the cluster analysis highlight the similarities among and differences between the higher education institutions in Karnataka, and the archetypical institutions in the system. We will present the cluster analysis results second.

'Big Picture' of the State-of-the-Aspiration of Karnataka's Higher Education System

We present the 'big picture' of the state-of-aspiration of Karnataka's higher education system as (a) an ontological map in Figure 2-2, and (b) a tree map in Figure 2- 3. We will describe the two maps first and then discuss the results.

In the rest of the report we will primarily discuss actual frequencies rather than percentages for the following reason. We have chosen to study the population of universities and university-like institutions in Karnataka rather than a sample. Thus, the frequencies express the actual number of institutions with a given attribute in the population. Frequencies in a sample when converted to percentages expresses the numbers of institutions likely to have that attribute in a hypothetical population of 100 – the actual population may be larger, smaller, or unknown. The percentages help generalize to a hypothetical population which is unnecessary in our case because we are studying the population as a whole. To the contrary, a frequency expressed as a percentage may in many cases miscommunicate the magnitude of a measure by inflating it my about half (given that the base is 65), and converting discrete measures into decimals.

In the ontological map, the numbers in parentheses indicate the number of institutions (out of 65) with the particular element in their synthetic vision/mission statements. Thus, for example, 30 institutions envision the Country as their scope, 22 the State, 13 the World, and none the Region or District(s). Similarly, 43 focus on the Sciences, 38 on the Professions, 26 on Humanities/Social Sciences, 18 on Fine Arts, and 1 on Vocations. Since most institutions emphasize multiple functions, focus, and outcomes the total frequency counts in those columns exceeds 65. The highest frequency item(s) is each column has

been highlighted in red, the second highest in orange, the third highest in yellow, and the fourth highest in green in order to enhance the visualization of the state-of-the-aspiration. Thus, reading across the ontological map it can be seen that the dominant aspiration is to be 'A leading institution in the country in research/education in sciences for social development in a knowledge society.' Similarly, there is virtually no emphasis on being or becoming 'The basic institution in the district(s) in vocations.'

The tree map presents the same analysis in a different format to aid visualization. The frequencies in the ontological map are represented by proportional areas in the tree map. Thus, for example, Research and Education functions with almost identical frequencies in the ontological map have correspondingly almost identical areas in the tree amp, with Service occupying a much smaller area corresponding to its lower frequency. Note that very low frequency items are not shown in the tree map.

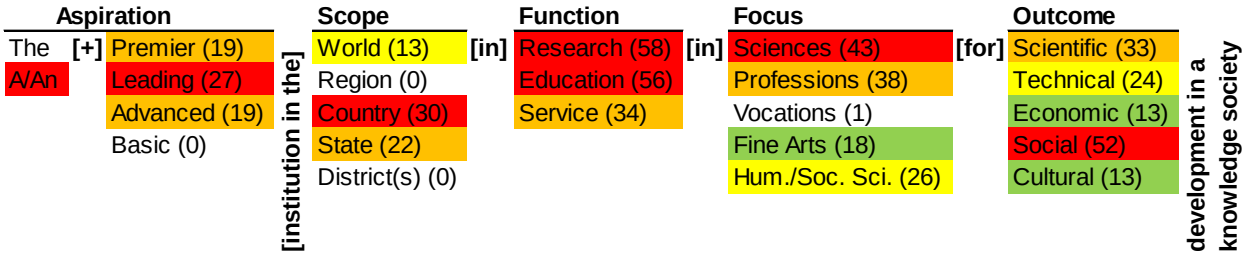


Figure 2-2: Ontological Map of the State-of-the-Aspiration of Karnataka's Higher Education System

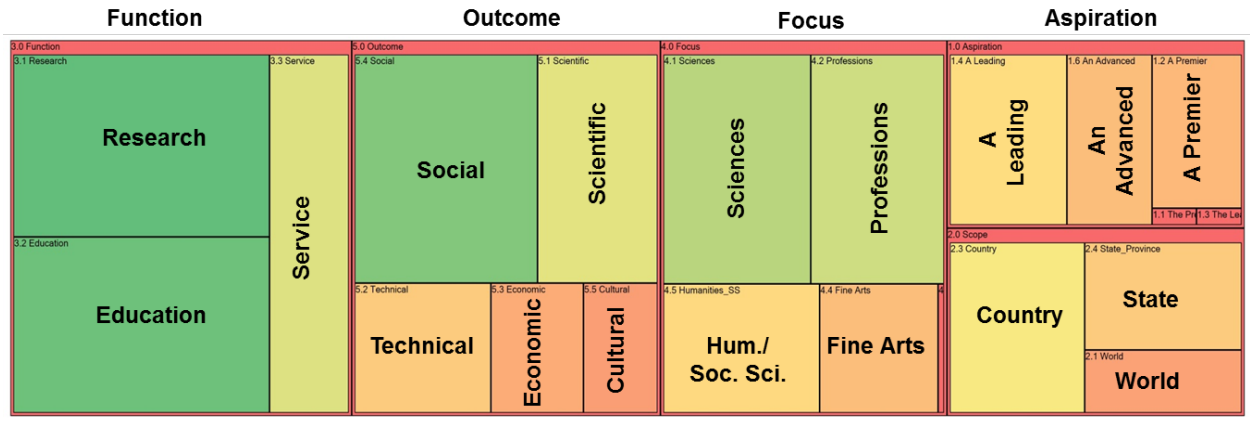


Figure 2-3: Tree Map of the State-of-the-Aspiration of Karnataka's Higher Education System

A deeper view of the 'big picture' can be obtained from Figure 2-3 which shows the priority of Function, Focus, and Outcome for the 65 institutions. Thus, for example, although almost an equal number of institutions emphasize Research (58) and Education (56), a significantly larger number (38) give first priority to Education compared to Research (26). In the same vein, Service – the third function is an aspiration of 34 institutions but is either second or third priority for all but one of them. Similarly, although 18 institutions focus on Fine Arts only a few (4) give it first priority. The Sciences and Professions dominate the first and second priority, followed by the Humanities/Social Sciences. Scientific and Social development are the dominant aspired outcomes followed by Technical and again Social

outcomes in the second place. Relatively few institutions aspire for Economic and Cultural development; many of those that do give it a low priority.

The nuanced picture of the state-of-the-aspiration of Karnataka's higher education system portrayed in Figure 2-4 is based on the vision/mission statements and related documents. It has to be further analyzed in the context of the state-of-the-practice (Chapter 3) and the state-of-the-need (proposed) to develop a strategy for higher education in Karnataka to transform the state into a knowledge society.

	Function			Focus					Outcome				
Item	Research	Education	Service	Sciences	Professions	Vocations	Fine Arts	Hum./Soc. Sci.	Scientific	Technical	Economic	Social	Cultural
Total count	58	56	34	43	38	1	18	26	33	24	13	52	13
Priority 1	26	38	1	31	18	0	4	12	28	7	1	25	4
Priority 2	27	15	12	10	17	1	4	7	3	15	8	15	4
Priority 3	5	3	21	2	2	0	4	7	1	2	4	7	3
Priority 4				0	1	0	6	0	1	0	0	5	0
Priority 5													2

Figure 2-4: Priority of Function, Focus, and Outcome

Stratified Picture of the State-of-the-Aspiration of Karnataka's Higher Education System

In Figure 2-5 we present a stratified picture of the state-of-the-aspiration by Breadth and Type of institution. The categories constituting the two and their respective definitions are given in the glossary in Appendix B. Since the institutions are distributed unequally among the categories of Breadth and Type it would be appropriate to compare the percentages rather than the actual numbers – both are shown in the figure. In the following we present some of our observations.

Both Specialized and Comprehensive institutions emphasize Research and Education; however, the Comprehensive institutions emphasize Education a little more than the Specialized ones. (Please see the Glossary for the definitions of the Specialized and Comprehensive institutions.) The emphasis on Service among the two types is almost the same. The Specialized institutions focus on the Sciences, Professions, and Humanities/Social Sciences (a distant third), with very little focus on Fine Arts and Vocations. The Comprehensive institutions on the other hand, focus on the Sciences, Professions, Humanities/Social Sciences, and Fine Arts – very little on Vocations. In terms of the outcomes, The Specialized institutions focus primarily on Social development and secondarily on Scientific and Technical development. On the other hand, the comprehensive institutions focus primarily on Social development with secondary focus on Scientific and Economic development and tertiary focus on Technical and Cultural development.

		Function			Focus					Outcome					
	Item	Research	Education	Service	Sciences	Professions	Vocations	Fine Arts	Hum./Soc. Sci.	Scientific	Technical	Economic	Social	Cultural	
	Total count	58	56	34	43	38	1	18	26	33	24	13	52	13	
By breadth	**Numbers**														Total
	Specialized	37	32	22	24	22	0	5	10	22	17	4	32	7	41
	Comprehensive	21	24	12	19	16	1	13	16	11	7	9	20	6	24
	Percentages														
	Specialized	90%	78%	54%	59%	54%	0%	12%	24%	54%	41%	10%	78%	17%	100%
	Comprehensive	88%	100%	50%	79%	67%	4%	54%	67%	46%	29%	38%	83%	25%	100%
By type	**Numbers**														Total
	Research	10	6	6	5	3	0	2	5	5	3	2	9	1	10
	Private	7	6	5	4	5	0	2	4	3	3	2	6	3	7
	State	18	23	9	16	14	1	11	12	10	4	5	18	5	23
	Deemed	14	16	8	13	13	0	2	3	10	9	2	11	2	16
	National	9	5	6	5	3	0	1	2	5	5	2	8	2	9
	Percentages														
	Research	100%	60%	60%	50%	30%	0%	20%	50%	50%	30%	20%	90%	10%	100%
	Private	100%	86%	71%	57%	71%	0%	29%	57%	43%	43%	29%	86%	43%	100%
	State	78%	100%	39%	70%	61%	4%	48%	52%	43%	17%	22%	78%	22%	100%
	Deemed	88%	100%	50%	81%	81%	0%	13%	19%	63%	56%	13%	69%	13%	100%
	National	100%	56%	67%	56%	33%	0%	11%	22%	56%	56%	22%	89%	22%	100%

Figure 2-5: State-of-the-Aspiration Stratified by Breadth and Type of Institution

All the Research, Private, and National institutions emphasize research in their aspiration, and most of the State and Deemed institutions do too. (Please see the Glossary for the definitions of the types of institutions.) Obversely, all the State and Deemed universities emphasize Education, and so do most of the Private institutions and a majority of the Research and National institutions. A large percentage of Private and National institutions emphasize Service, followed by Research, Deemed, and State institutions in order. A large percentage of Deemed institutions emphasize the Sciences, followed by a significant percentage of State institutions, and a majority of Private, National, and Research institutions. In the same vein, a large percentage of Deemed institutions emphasize the Professions, followed by a significant percentage of Private and State institutions; only a minority of Research and National institutions emphasize the Professions.

State institutions emphasize Fine Arts the most; a majority of Research, Private, and State institutions emphasize Humanities/Social Sciences. All the five types of institutions emphasize Social development -- Research, National, and Private institutions more than the rest. All the types emphasize Scientific development too but less than those emphasizing Social development. Deemed and National institutions lead in the emphasis on Scientific development. A majority of Deemed and National institutions emphasize Technical development; a minority of Private and Research institutions do too. A relatively small percentage of institutions emphasize Economic development – Private institutions lead the pack. Similarly, very few institutions emphasize Cultural development – here too a minority of Private institutions is in the lead.

Cluster Analysis of the State-of-the-Aspiration of Karnataka's Higher Education System

The data on the state-of-the-aspiration has been coded in 65 rows (one row per institution) and 26 columns as shown in Figure 2-1 (only two rows are shown in the figure). Using this data we performed two cluster analyses based on (a) similarity of aspirations of the institutions, and (b) correlation between the ontology attributes among the institutions. The priorities assigned to the attributes were not used in clustering. The analysis itself was performed with NVivo using Jaccard's coefficient as the distance measure.

The dendogram of the institution clusters based on the similarity of their aspirations is shown in Figure 2-6 below. At the third level of the dendogram there are four broad groups as labeled in the figure. The color coding generated by the clustering program suggests subgroups within these groups. These clusters provide another portrait of the state-of-the-aspiration of the Karnataka's higher education system.

At the top of Group 1 are Specialized institutions focused on the humanities and social sciences. At the bottom of Group 1 too are mostly Specialized institutions in the sciences and professions. Group 2 is a mix of Specialized and Comprehensive institutions weighted more towards the former. On the other hand, Group 3 is a mix of Specialized and Comprehensive institutions weighted towards the latter. Last Group 4 has a small number of Specialized institutions focused primarily on the sciences.

The clusters portray a diverse set of higher education institutions in Karnataka with aspirations which are predictably and surprisingly similar and different. For example, Karnataka State Women's University and the National Law School of India University have very similar aspirations, whereas the Institute for Social and Economic Change and Jawaharlal Nehru Centre for Advanced Scientific Research are at the opposite ends of the dendogram. Similarly, in Group 2, there is a surprising mix of National and State institutions. The clusters suggest a grouping of institutions different from the normative grouping by Breadth and Type in the Glossary. Thus, a deemed institution's aspirations may be closer to some national and central institutions than to state institutions.

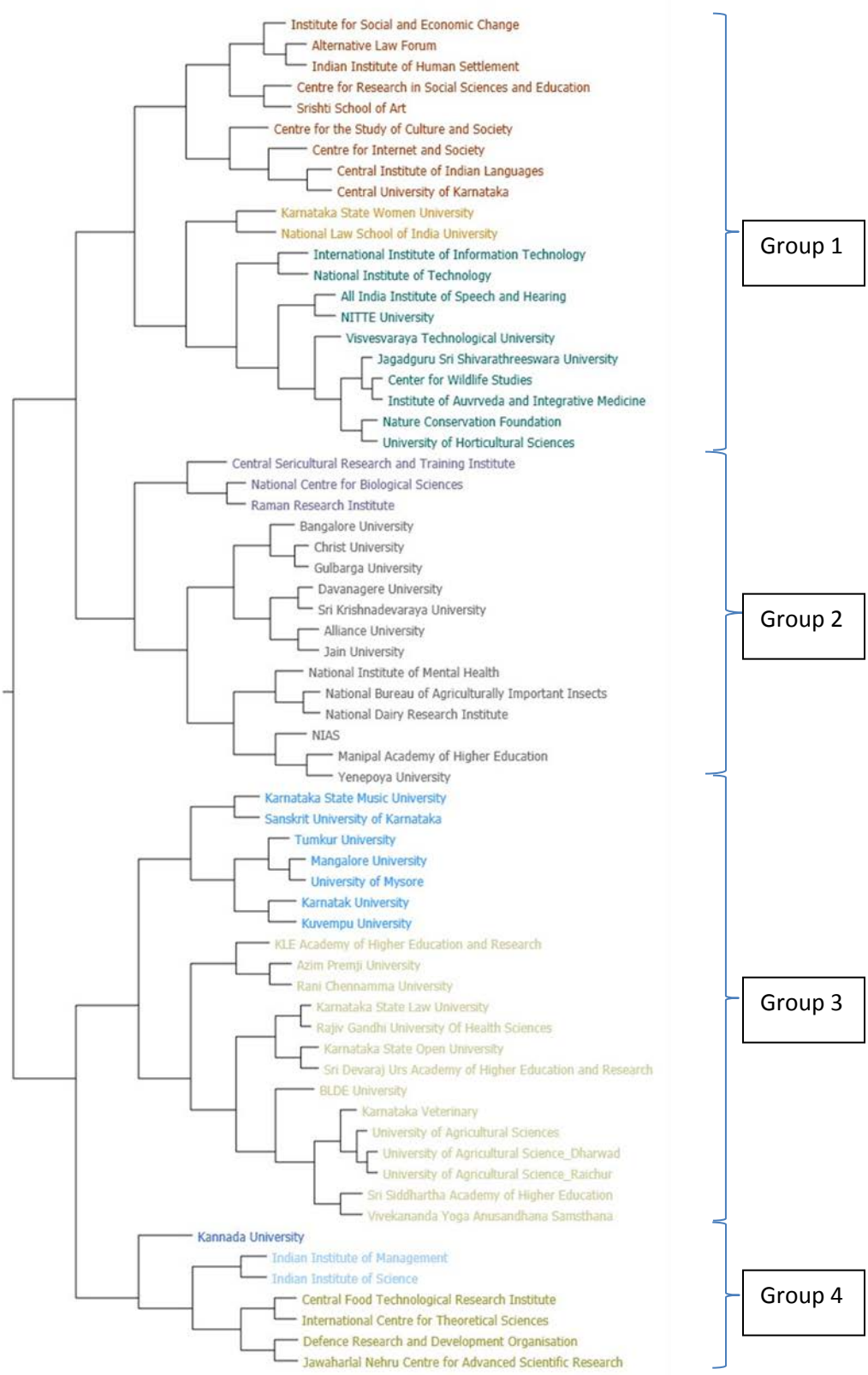


Figure 2-6: Clusters of Institutions

The clusters of institutions are a summary of the evidence without judgment whether or not an institution belongs to the right group, and whether the groups together contribute to a viable ecology. These are issues for the decision and policy makers in the institutions and the higher education system to debate and decide..

The dendogram of the clusters of the ontology attributes is shown in Figure 2-7. It is based on the correlation between the attributes. For example, Scientific development and focus on the Sciences cluster together – it makes intuitive sense. However, the Service function too is closely correlated with the two, and that is surprising. At the extremes of the dendogram are orphan attributes – there are very few, if any, institutions with these attributes.

There appear to be three clusters of attributes representing three archetypical institutions. The first archetype is 'An advanced institution in the country for research, education, and service in the sciences and professions for scientific and social development.' The second is 'A leading institution in the state in humanities/social sciences and fine arts for cultural and economic development.' And the third, 'A premier institute in the world for technical development.' The first and the third archetypes are close to each other, and the first and the second are opposites of each other. The question from the point of view of Karnataka's knowledge ecology is whether these archetypes are sufficient and appropriate for the development of a knowledge society.

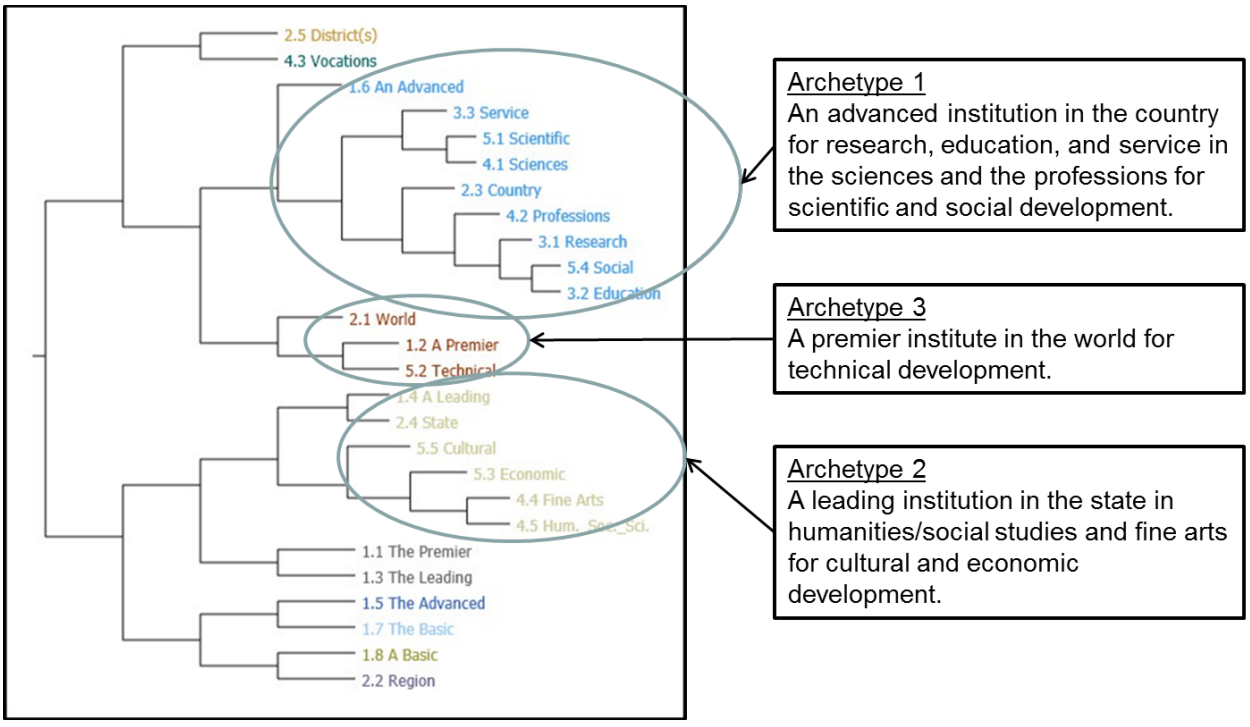


Figure 2-7: Clusters of Attributes

Discussion and Conclusion

Karnataka has a few more than 65 institutions of higher education – there are some institutions which have not been included in our sample and they will be added in the next iteration. The aspirations of the 65 institutions which we have studied in depth are sufficient to paint a detailed profile of the state-of-the-aspiration of the higher education system in Karnataka. The data about their aspirations is publicly available and are presumed to be current and valid. However, should the data change for any reason – the addition of new institutions, removal of existing ones, revision of vision/mission statements, etc. – the profile can be correspondingly updated. In the following we will discuss the profile developed from the earlier analysis based on the data collected around May-June 2012 for the 65 institutions in Appendix A and conclude with an assessment of the state-of-the-aspiration of the higher education system in Karnataka.

Figure 2-8: Geographical Distribution of Institutions of Higher Education in Karnataka

Geographical Distribution and Scope

The 65 institutions are concentrated primarily in and near Bengaluru and Mysore as shown in the map below (Figure 2-8). No institution among the 65 defines its scope as the District(s) in its proximity even though some of the state institutions may be mandated to do so; all of them aspire to position themselves at the State or higher levels. If in fact many of these institutions service the districts with few

or no higher education institutions then the absence of focus on the District(s) in Figure 2-2 may not be a significant lacuna in the state-of-the-aspiration. On the other hand, if the institutions fail to service the distant districts, the non-uniform distribution combined with the lack of focus on the District(s) could be a significant lacuna.

Modest Aspiration

All the institutions aspire to be A Leading (27), A Premier (19), or An Advanced (19). None appears to preface the aspiration with the definite article The, aspiring to be The Premier, The Leading, The Advanced, or The Basic institution in, for example, the District(s), State, Country, Region, or World. The modest aspiration of the institutions is in in contrast to the broader attention being given to global and national rankings of institutions, and the emphasis on world-class institutions and higher education systems. Even specialized institutions unique to Karnataka do not seem to aspire to be The Premier or The Leading in their field in the State, Country, Region, or World. The modesty may reflect a cultural trait of the country and the state wherein the true latent aspiration is higher than what is stated. Or, the stated aspiration may in fact be the true aspiration. Irrespective of the explanation, the challenge will be to match the aspiration to the requirements for the development of a knowledge society in a globally competitive world.

Global vs. Local Scope

As highlighted earlier, none of the institutions define the District(s) as their scope, but about a third defines the State as their scope, slightly less than half the Country, none the Region, and about a fifth the World. Ideally, one may expect a pyramid-like structure with the largest number having a local scope and the fewest being global. One can see such a structure in the profile of the American higher education system (Figure 2-9) which is often cited as an excellent model. The Community Colleges,

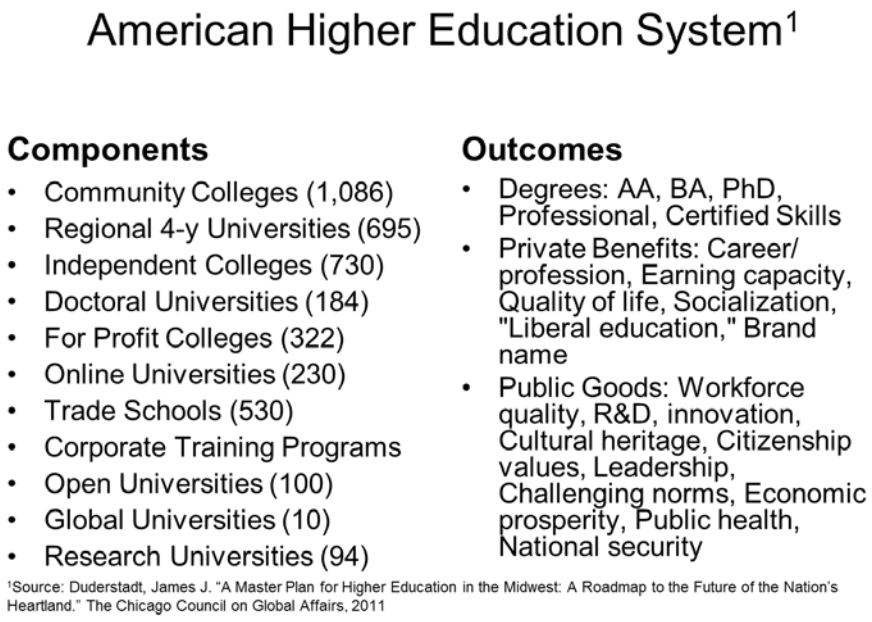


Figure 2-9: Profile of American Higher Education System

whose scope is local, are the largest in number (1086). At the other end, there are very few Global Universities (10) and more Research Universities (94) – the latter's scope is likely to be both global and national. Next in order are Doctoral Universities (184) and Regional (within the US) 4-year Universities (695).

The imbalance, as compared to the pyramid-like structure, may partially be a product of the sample choice. By focusing on universities and university-like institutions we may have excluded institutions with a very local focus. It may also be due the present emergent phase of the higher education system in Karnataka. Irrespective of the reasons, balancing the scope of the institutions will be a key parameter for the development of a knowledge society in Karnataka.

Balancing the Functions

In the aggregate Research (58), Education (56), and Service (34) (Figure 2-2) seem to be well balanced, with Research and Education being given equal emphasis and Service being given less but significant emphasis. As the first priority (Figure 2-4) Education (38) is emphasized more than Research (26); as the second priority Research (27) is emphasized more than Education (15) with Service (12) being third; and as the third priority Service (21) is dominant.

Further, there appears to be little difference between Specialized and Comprehensive institutions in their emphasis on Research and Service (Figure 2-5). However, Comprehensive institutions appear to stress Education more than Specialized institutions.

Last, the emphasis on Research and Education among the five types of universities appear to be complementary. All Research, Private, and National institutions emphasize Research and most of them emphasize Education. On the other hand, all State and Deemed institutions emphasize Education and most of them emphasize Research. The pattern is less clear with regards to Service – Private and National institutions emphasize it the most, State institutions the least.

The evidence on aspirations regarding the functions seems to broadly fit the expectations, especially with regard to Research and Education. The Service evidence seems to fit too except the expectations for the different types of institutions is unclear.

Non-Uniform Focus

One may argue that ideally the focus on the Sciences, Professions, Vocations, Fine Arts, and Humanities/Social Sciences should be uniform for the development of a knowledge society. Compared to this ideal, the focus of the aspirations of the higher education institutions in Karnataka is not uniform (Figure 2-3). About two-thirds of the institutions emphasize the Sciences, a few more than half the Professions, a little more than a third the Humanities/Social Sciences, a little more than a quarter Fine Arts, and just one the Vocations. Compared to the ideal, in the aggregate, the institutions emphasize the Sciences and the Professions far more heavily than the other focus.

More than two-thirds of the institutions which emphasize the Sciences give it the first priority; only about half the institutions which emphasize the Professions and Humanities/Social Sciences give it first priority (Figure 2- 4). Slightly less than quarter of the institutions which emphasize the Sciences give it

second priority and about half those which emphasize the Professions give it second priority. Fine Arts and Humanities/Social Sciences generally are given lower priority.

Comprehensive institutions emphasize all the focus areas more than the Specialized institutions – it may be tautological for the former by definition are more broadly focused (Figure 2- 5). Deemed and State institutions emphasize the Sciences the most and a majority of the other types of institutions do too. Deemed, Private, and State institutions emphasize the Professions in that order while about of third of Research and National institutions do so. State institutions emphasize the Fine Arts the most, although slightly less than half do so. Slightly less than a third of the Private institutions emphasize Fine Arts and about a fifth of the Research institutions. Deemed and National institutions emphasize it very little. A slight majority of the Private, State, and Research institutions emphasize the Humanities/Social Sciences, and about a fifth of the National and Deemed institutions do too.

Thus, on the whole the distribution across the Focus areas and among the different Types of institutions is non-uniform. If one assumes that all Focus areas are equally important for the development of a knowledge society, then the distribution in Karnataka's higher education system is far from ideal.

Skewed Outcomes

As with the Focus, one may argue that ideally Scientific, Technical, Economic, Social, and Cultural development are equally important in a knowledge society and that there should be equal emphasis on these in the aspiration of the higher education system. In Karnataka the emphasis is far from this ideal. About 80% of the institutions emphasize Social development; half the institutions emphasize Scientific development; a little more than a third Technical development; and about a fifth Economic and Cultural development (Figure 2-3). The heavy emphasis on Social development with relatively little emphasis on Economic development is surprising in today's global economy where the two are often seen to go hand in hand. Scientific and Technical development are seen as instrumental for Economic and Social development, but the two are emphasized far less than Social development but more than Economic development. Furthermore, the emphasis on Scientific and Technical development doesn't seem to match the focus on the Sciences and the Professions discussed earlier. The low emphasis on Cultural development unfortunately matches the focus on low Fine Arts. Disaggregated by priority (Figure 2- 4), between a third and a half give first priority to Scientific development and Social development respectively, about a quarter give second priority to Technical development and Social development respectively.

Specialized and Comprehensive institutions do not seem to differ much in their emphasis on Social development, although the former emphasize Scientific and Technical development a little more, while the latter emphasize Economic and Cultural development a little more (Figure 2-5). Interestingly, the emphasis on Social development is quite strong across Research, National, Private, State, and Deemed institutions – in that order. The emphasis on Scientific and Technical development across these types of institutions is not as strong, and even weaker for Economic development. Interestingly, Private institutions emphasize Cultural development significantly more than the others. Thus, the general pattern of emphasis on the outcomes based on Figure 2-3 seems to hold irrespective of the reach and Type of institution, except with a few exceptions.

Conclusion

The state-of-the-aspiration of the higher education system in Karnataka is rich but not ideal. In the above we have painted portraits of the system as an ontological map, tree map, graph tables, and dendograms, and through these analyzed the strengths and weaknesses of the system. They are, to summarize:

1. The aspiration of the higher education system is modest and varied, but not ideally balanced;
2. Its scope is rich and diverse, but not well distributed;
3. Its functions are appropriate in the aggregate and reasonably well distributed;
4. Its focus is varied but non-uniform and needs to be reassessed; and
5. Its outcomes are appropriate but their emphases skewed and need to be realigned to foster the development of a knowledge society.

Seen from the perspective of transforming Karnataka into a knowledge society, there is a rich diversity of institutions whose aspirations cluster in both predictable and unexpected ways, thus providing the basis for integrating a set of well differentiated institutions of higher education into Karnataka's knowledge ecology. Specialized and Comprehensive institutions are comingled in their aspiration, and so are Research, Private, State, Deemed, and National institutions. Such comingling can, on the one hand, be seen as the dilution of the institutions' mission and mandate; on the other, it may represent the evolution of the institutions and thus as an opportunity for integrating them into the knowledge ecology.

One may question the validity of using the vision/mission statements to map the state-of-the-aspiration for the following reasons:

a. The statements may not truly capture the aspirations of the institutions. They may be perfunctory – not evolved with the consultation of all stakeholders over a period of time, or simply developed in a hurry to satisfy accreditation requirements.

b. The structured language of the ontological framework may not capture the semantic nuances and complexities of an institutions aspiration.

While the first point may be true, the public statement by the institution remains the best data about its aspiration. It may be far from perfect, yet it may be the best unless an alternative becomes available. Moreover, should there be a new statement the revision can be easily incorporated in the map. On the second point, while the semantic limitations of the ontological framework may limit its ability to capture the nuances and complexities, we believe it has sufficient granularity (with 3000 possible combinations) for a first mapping exercise. The framework may be refined further, if necessary, in a future iteration.

Moreover, to further address the semantic issue, we tested the feasibility of translating the ontological framework into Kannada. The result is shown in Figure 2-10 below. The order of the columns had to be changed from the English version to accommodate the different sentence structure in Kannada. Overall, we believe, the frameworks in the two languages are semantically equivalent. While we did not use the

Kannada version for the rest of our study, it could be adopted for future studies to reduce semantic noise due to translation from Kannada to English and back.

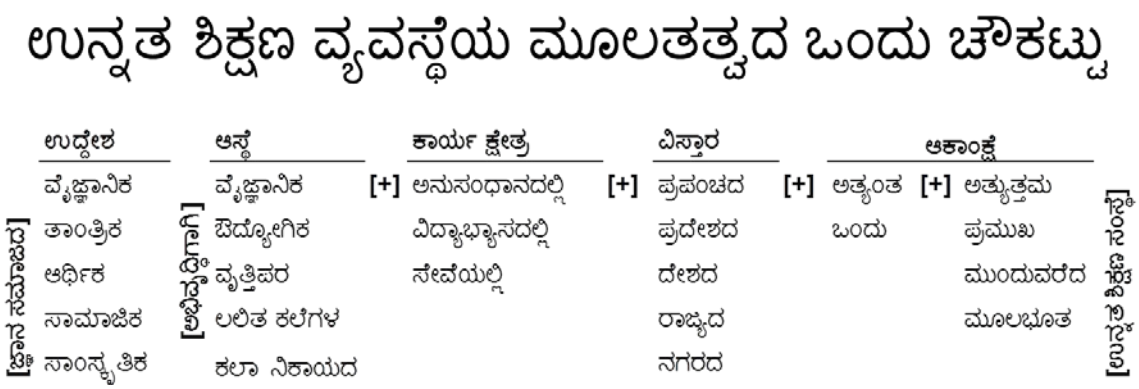


Figure 2-10: An Ontological Framework for Mapping Karnataka's Higher Education -- in Kannada

Karnataka is an important destination for higher education in India. By systematically architecting the aspiration of the higher education system based on the above analysis and of (a) the state-of-the-practice, and (b) the state-of-the-need, it could seek to transform itself into a knowledge hub for India and Asia.

Chapter 3 State-of-the-Practice of the Higher Education System in Karnataka

In this chapter we present a portrait of the state-of-the-practice of the higher education system in Karnataka based on the 65 universities and university-like institutions we studied. The list of institutions is in Appendix A and the rationale for their choice is discussed in Chapter 1. The chapter is organized into the following sections:

1. Data collection
2. Data coding
3. Data analysis and results
4. Discussion and conclusion

Data Collection

The data for mapping the state-of-the-practice were collected from a number of institutional and external sources. The internal sources of data were the institution's annual reports, IQAC (Internal Quality Assurance Cell) reports, AQAR (Annual Quality Assurance Reports) reports, magazines, brochures, orientation program material, convocation speeches, annual budgets, and newsletters. The external sources of data were the UGC (University Grants Commission), NAAC (National Assessment and Accreditation Council), rankings and surveys, selective online portals, ICSSR (Indian Council for Social Science Research), AICTE (All India Council for Technical Education), MCI (Medical Council of India), Association of Indian Universities, and NBA (National Board of Accreditation) established by AICTE.

Most of the data were collected online from the websites of the institutions, agencies, and organizations mentioned above. NAAC provided us hard and soft copies of data they had about some of the 65 institutions. We obtained hard copies of relevant reports and other data available with the Karnataka Knowledge Commission. We also requested the data in person from a couple of institutions. Last, we requested the Vice Chancellors/Registrars of all the 65 institutions for data via e-mail and letter (Appendix C). All the data were collated in a central electronic repository. The following is our assessment of the state-of-the-practice data.

Sources of Data

The multiple sources helped us to accumulate a substantial amount of data about the state-of-the-practice of the 65 institutions. Some data from the different sources were duplicates; but a considerable amount was complimentary. The data from multiple sources also helped us triangulate our assessment of the state-of-the-practice of an institution. Later we discuss our rating of the currency, quantity, and quality of the data. Institutions with well-organized websites required us to seek fewer sources compared to those with ill-organized sites.

Search for Data

The difficulty of searching for data varied considerably between institutions. Even when the data were available on the website the organization of the site significantly affected the ease of search. In some cases, the access was direct – either from the menu choices or searching the site; in other cases the

researchers had to sift through multiple layers and locations to obtain the data. The navigation through the sites was often difficult.

The response to our e-mail/letter requesting data varied considerably. Some responded immediately, pointing us to the website and the location of the information we were requesting. (In most cases we had already obtained the data.) These were usually the institutions with well-organized websites. Some sent electronic or hard copies of the available reports immediately. A few others stated their inability to share the data due to the laws governing their institutions. A couple of them expressed their inability to let us take a copy out of the office or share a copy with us.

Our experience (both positive and negative) with searching for data from multiple sources suggests both the potential for and difficulty of collecting a systematic knowledgebase for the assessment of the state-of-the-practice. While the data we collected for the 65 institutions are not identical for each, we were able to accumulate sufficient data for almost all of them to make a reasonable assessment. In subsequent iterations as the reporting processes improve, the search should be easier and sources should become more standardized.

Selection of Data

The selection of data to be included in the knowledgebase was guided by the ontological framework. If the data about the institution mapped to any element of the framework, it was included. Other data were excluded. In deciding about particular data we were inclusive and not exclusive – deciding to include when we were in doubt rather than exclude the data. The low cost of storing large volumes of data electronically and the ease of searching the sources using various indexing and tagging techniques facilitated this selection strategy. It would have been difficult to do so with a completely paper-based knowledgebase. In the next section we discuss the storage and retrieval of the data.

Storage and Retrieval of Data

All the data were stored in a central Zotero knowledgebase. The data were stored as links to websites (URLs), documents (PDF and other formats), images (scanned PDFs and other formats), and notes by the research team members. All the team members had full access rights to the knowledgebase to update, edit, and keep it current. Zotero also ensured that a change by a member would be propagated to the other members when they synchronized their local copy with the central copy of the knowledgebase at login.

In summary, collecting the data about the state-of-the-practice of the 65 institutions was a challenge. While there is a considerable amount of data available they are not easily accessible – they are distributed across many sources, in multiple formats, and poorly organized. Sometimes institutional policies limit their availability and accessibility. Yet, with some effort, it is possible to systematically collate a significant amount of data about the higher education system in the state. We estimate that we have the equivalent of approximately 65,000 pages of data – about a 1,000 pages per institution. Most of the data are text with both numerical and non-numerical tables. While they can be indexed, tagged, and searched, it would be difficult to incorporate all of them into a structured database.

We will later present our assessment of the currency, quantity, quality, and organization of the data. Their unevenness in terms of these attributes makes data collection difficult. Yet, at the same time we believe that with subsequent iterations of data collection and results presentation, there will be a positively reinforcing feedback loop which will improve the efficiency and effectiveness of data collection.

Data Coding

The state-of-the-practice was coded using a protocol similar to the one used for coding the state-of-the-aspiration. The objective of coding was to construct three synthetic statements – one each for Research, Education, and Service – for each institution using the structured language of the ontological framework. Following are two examples:

- University A
    - An advanced university in the country in education in the professions, sciences, and vocations for scientific, social, and technical development
    - A basic university in the country in research in the professions for economic and social development
    - No service data
- University B
    - The basic university in the district for education in humanities/social sciences, sciences, and professions for social and economic development
    - A leading university in the state in research in sciences and humanities/social sciences for scientific, social, and cultural development
    - An advanced university in the state for service in humanities/social sciences and sciences for social, cultural, and scientific development.

The coding was by consensus among the four team members. The initial coding was done by one member and verified by another. The final coding was determined by discussion among all four.

The process of coding can be characterized as qualitative hypothesis testing based on all the evidence collected. As we coded each institution's state-of-the-practice of Research, Education, and Service we asked ourselves: What is the best synthetic statement about each function we cannot reject based on the evidence? In constructing these statements we constantly iterated with the corpus of data about the institution to assure ourselves that (a) the evidence justified the statement, and (b) the statement justified the evidence. We also coded the rank of Focus and Outcome within each synthetic statement based on the evidence.

Further, while coding each statement we assessed the currency, quantity, and the quality of the data. The Currency was coded as Current (less than a year old), Recent (1-3 years old), and Dated (more than 3 years old). The Quantity of data was coded as Rich (more than enough to judge), Sufficient (enough to judge), and Sparse (not enough to judge). The Quality of data was coded as Official (official reports, official website etc.), Credible (reliable but not official sources), and Promotional (for example, publicity materials, posters).

In summary, the state-of-the-practice of the 65 institutions in research, education, and service were coded as 180 synthetic statements; 15 statements were coded blank due to lack of data. Further, for each statement we coded the currency, quantity, and quality of the data. In the next section we will discuss the analysis of the data and the results.

Data Analysis and Results

The objective of the data analysis is to portray the state-of-the-practice of the higher education system in Karnataka within the ontological framework. In the following we will present the results of our analysis using frequency tables and dendograms from cluster analysis. First, we will present the data about the data – its granularity and its currency, quantity, and quality. While we have not factored these attributes directly into the subsequent analysis, for example – by weighting the synthetic statements by these attributes, the data about the data serve as a backdrop to the subsequent results. What is presented is a portrait based on the best data available to the team to-date – it is good but it could be improved with better data in subsequent iterations.

Data Granularity

Ideally, data about an institution should be available at the level of the individual faculty members, their departments, the disciplines, and the institution. Presumably the departmental data will be an aggregation and interpretation of the individual-level data, the discipline data of the department-level data, and the institutional data of the discipline-level data. In this ideal scenario there will be a consistency between levels, cogent integration across each level, and a coherent interpretation between levels.

Absent the ideal, the integration and interpretation is left to the researcher. Thus, for example, in one institution the data was extremely rich and voluminous at the individual and departmental levels but extremely poor at the discipline and institutional levels. The researchers had to aggregate and code the state-of-the-practice of the institution based on the very detailed data rather than use the aggregation and interpretation of the institution itself in coding its state-of-the-practice.

The granularity of the state-of-the-practice data is portrayed in Figure 3-1 below. For slightly less than half the institutions we have none to low quantity of institutional-level data and for the rest medium to high quantity. At the discipline level, there is no data for slightly less than half the institutions whereas there is a medium to high quantity for about half. More than two thirds of the institutions have medium-high quantity of department-level data, and about a quarter low quantity. The pattern is similar at the individual-level data.

	Data Granularity			
Quantity	**Individual**	**Department**	**Discipline**	**Institutional**
Nil	4	3	28	1
Low	22	17	8	29
Medium	34	36	26	15
High	5	9	3	20

Figure 3-1: Granularity of State-of-the-Practice Data

The quantity of data at different levels of granularity among the 65 institutions is very uneven. It is a reflection of the organization and interpretation of the data about itself by the institution, and the projection of its identity. The validity of the synthetic statements about the state-of-the-practice will depend upon the evidence at all levels of granularity. Weak data at any level will correspondingly affect the validity of the statement. We have tried to factor the data granularity into our judgment of the state-of-the-practice at an institution.

Data Currency, Quantity, and Quality

The currency, quantity, and quality of data for the 195 (65*3) possible synthetic statements of practice are shown in Figure 3-2. No data were available for 15 statements. For about two-thirds of the statements the data are current, recent for about a sixth, and dated for less than a tenth. The quantity of data was rich for slightly more than a quarter of the statements, sufficient for a little more than a third, and sparse for more than a fifth of the statements. Correspondingly, the quality of the data was official for somewhat less than half the statements, credible for less than a third, and promotional for about a fifth.

	Data		
Characteristics	**Currency**	**Quantity**	**Quality**
Current/Rich/Official	135	57	83
Recent/Sufficient/Credible	29	76	60
Dated/Sparse/Promotional	16	47	37
Blank	15	15	15

Figure 3-2: Currency, Quantity, and Quality of Data

Ideally, all data should be current, rich, and official. It is not and is unlikely to be in the immediate future. In coding the data into synthetic statements of the state-of-the-practice we have sought to factor these attributes into our judgment.

State-of-the-Practice of Research, Education, and Service

The state-of-the-practice of Research, Education, and Service is summarized below in Figure 3-3. We will discuss it in detail in the following. We will compare and contrast the state-of-the-practice with the state-of-the-aspiration in Chapter 4.

The Scope of the state-of-the-practice in Research is dominantly the Country (41) and then the State (15). One institution has a World Scope and five the District(s). Within this distribution of scope about a third of the institutions are among the Advanced (22) and about a fifth are among the Leading (14) institutions. The Focus is dominantly the Sciences (43) followed by Humanities/Social Sciences (29) and Professions (24). The Outcomes of their research is primarily Scientific (43) and Social (39) development followed by Technical (22), Economic (16), and Cultural (15) development. There are no Premier research institutions and there are a few Basic (13) research institutions.

	Realization								Scope				Focus					Outcome				
Function	The Premier	A Premier	The Leading	A Leading	The Advanced	An Advanced	The Basic	A Basic	World	Country	State	District(s)	Sciences	Professions	Vocations	Fine Arts	Humanities/SS	Scientific	Technical	Economic	Social	Cultural
Research	0	0	5	14	8	22	4	9	1	41	15	5	43	24	7	7	29	43	22	16	39	15
Education	1	2	2	13	4	20	8	12	1	32	23	6	41	40	16	13	29	41	22	28	44	15
Service	0	0	3	6	3	19	7	18	0	15	30	11	29	24	13	4	27	22	17	11	47	17

Figure 3-3: State-of-the-Practice of Research, Education, and Service

The Scope of the state-of-the-practice in Education is similar to that in Research with a little less emphasis on the Country (32) and more on the State (23). One institution has a World Scope and six the District(s). Within this distribution of scope, slightly less than a third is An Advanced (20) institution and about a fifth A Leading (13) institution. Two are The Leading institutions and three are among the Premier institutions. Slightly less than a third (20) is Basic institutions. There are more Basic and Premier institutions than in Research. The Focus of Education is heavily on the Sciences (41) and the Professions (40), followed by Humanities/Social Sciences (29), Vocations (16), and Fine Arts (13). The emphasis on Professions, Vocations, and Fine Arts is almost double that in Research. The Outcomes of their Education is primarily Social (44) and Scientific (41) development, followed by Economic (28), Technical (22), and Cultural (15) development – similar to research but with a little more emphasis on Economic and Social development

The Scope of the state-of-the-practice in Service is primarily the State (30), followed by the Country (15), and the District(s) (11). They are dominantly An Advanced (19) or A Basic (18) provider of Service. There is no Premier Service provider; there are however more Basic Service providers than similar education and research institutions. The Focus of Service is almost equally the Sciences (29), Humanities/Social Sciences (27), and the Professions (24); they are followed by the Vocations (13) and Fine Arts (4). The Outcome of Service is dominantly Social (47) development; Scientific (22), Technical (17), Cultural (17), and Economic (11) trail behind.

Thus the state-of-the-practice of Research, Education, and Service among Karnataka's higher education institutions is diverse and complex. The institutions are differentiated by their emphasis on the three Functions as well as the level of Realization, Scope, Focus, and Outcome. We will investigate the differences among the institutions more deeply in next section using cluster analysis.

Cluster Analysis of Institutions and Attributes

We analyzed the state-of-the-practice data by clustering it two ways: (a) by institutions, and (b) by attributes, as we had in the case of the state-of-the-aspiration. Since the state-of-the-practice was coded separately for research, education, and service, the three sets were cluster-analyzed separately. After a few trials a four-cluster solution was imposed on the clustering of institutions for ease of interpretation; no *a priori* solution was imposed on the clustering of attributes. The analysis was performed with SPSS using hierarchical clustering, Ward's method, and squared Euclidean distance measure. The results of the cluster analysis are presented as a dendogram (Figures 3-4 to 3-9). The four clusters of institutions are identified and labeled with the number of members in each. Corresponding to each institution cluster the frequencies of the attributes are summarized in the table below. The archetypes of institutions based on the clusters of attributes are also labeled in the corresponding dendograms.

Following is the characterization of the four institution clusters based on the state-of-the-practice of Research, Education, and Service respectively. The institutions constituting each cluster are shown in the corresponding figures and the differences in the attributes of these clusters highlighted by coloring the high-frequency cells in red.

- Research-based clusters (Figure 3-4)
    - Leading, advanced, and basic institutions in the country for research in the sciences and the professions for scientific and technical development.
    - Leading, advanced, and basic institutions in the country for research in the professions, humanities/social sciences for social, economic, and cultural development.
    - Advanced institutions in the country for research in the sciences for scientific, technical, and social development.
    - Basic institutions in the state for research in the sciences and humanities/social sciences for scientific and social development.

    The clusters contribute differently to the development of a knowledge society through research. The first cluster's focus is on Scientific and Technical development via the Sciences and Professions. The third cluster, on the other hand, combines Social development with Scientific and Technical development, but focuses on the Sciences alone. The second cluster complements the first in its focus on Economic, Social, and Cultural development via the Professions and Humanities/Social Sciences. The first three clusters' scope is the Country. In contrast, the fourth cluster's scope is the State; it seeks Scientific and Social development via the Sciences and Humanities/Social Sciences.

- Education-based clusters (Figure 3-6)
    - A leading institution in the country/state for education in the sciences, professions, and vocations for scientific, technical, economic, and social development.
    - An advanced institution in the country for education in the professions and humanities/social sciences for social, cultural, and economic development.
    - An institution in the state for education in the sciences, professions, and humanities/social sciences for social, scientific, and economic development.
    - An institution in the country for education in the sciences for scientific and social development.

    The clusters contribute differently to the development of a knowledge society through education. The first cluster's focus is the full range of development except Cultural development, with a focus on the Sciences, Professions, and Vocations. Its member's focus is the Country/State. In contrast, the fourth cluster's focus is only the Sciences for Scientific and Social development in the Country. The second cluster is distinct in its contributing to Social, Cultural, and Economic development in the Country by focusing on the Professions and Humanities/Social Sciences. The third cluster's distinguishing feature is its focus on the State and District(s), with emphasis on the Sciences, Professions, and Humanities/Social Sciences for Social, Scientific, and Economic development.

- Service-based clusters (Figure 3-8)
    - A/An/The basic/leading/advanced institution in the country for service in the sciences and professions for scientific and social development.
    - A basic institution in the state for service in the humanities for social and cultutral development.
    - An instituion with no service.
    - An advanced institution in the state for service in the professions and vocations for social andd technical development.

    The clusters contribute differently to the development of a knowledge society through service – except the third cluster whose members do not provide service. The first cluster emphasizes all types of development except Cultural development, although its primary emphasis is on Social and Scientific development of the Country and State through the Sciences and the Professions. The second cluster's emphasis is Social and Cultural development in the State (primarily) and the District(s) via the Humanities/Social Sciences.

The cluster charactertics and membership based on the state-of-the-practice are diverse and complex. The clusters are a mixture of Specialized, Comprehensive, Research , Private, State, Deemed, and National/Central institutions as defined in the Glossary (Appendix B). They reveal the complexity of the knowledge ecology and partly perhaps the adaptation of these institutions to the state-of-the-need.

Clustering the attributes based on the state-of-the-practice in Research, Education, and Service provides a different perrspective. It reveals the dominant combinations of attributes among institutions. These

combinations can be seen as archetypes (dominant types) of Research, Education, and Service among the higher education institutions in Karnataka. The complete dendograms of the three cluster analyses are shown in Figures 14, 16, and 18 respectively. In the following we summarize the archetypes inferred from them:

- Research-based archetype (Figure 3-5)
    - An advanced institution in the country for research in sciences, professions, and humanities/social sciences, for scientific, technical, economic, and social development.

    The single dominantt archetype poses the question: Is there sufficient diversity in research among the institutions in the state?

- Education-based archetypes (Figure 3-7)
    - An institution in the state for education in sciences, professions, and humanities/social sciences, for scientific, economic, and social development.
    - An advanced institution in fine arts in the country for cultural development.
    - A leading institution in vocations for technical development.

    In contrast to Research, there appears to be more variation in the Education archetypes of the institutions.

- Service-based archetypes (Figure 3-9)
    - An advanced institution for service in sciences, professions, and vocations, for scientific, technical, and economic development.
    - A basic institution in the state and district(s) for service in humanities and social sciences for social and cultural development.

    There appears to be a dichotomy of service archetypes.

The Research-based archetype is an advanced national institution for research in the sciences (hard and soft) and the professions for scientific, technical, economic, and social development. It does not include finea arts and cultural development. On the other hand, the Education-based archetypes are: (a) a comprehensive state institution for education in the sciences (hard and soft) and professions for scientific, ecconomic, and social development, (b) a specialized national institution for education in the fine arts and cultural development, and (c) a vocational education institution. The Service-based archetypes are: (a) an advanced institution to provide scientific and professional service for scientific, economic, and social development, and (b) a local institution to provide humanities and social sciences service for social and cultural development. We will present our conclusions in the next section.

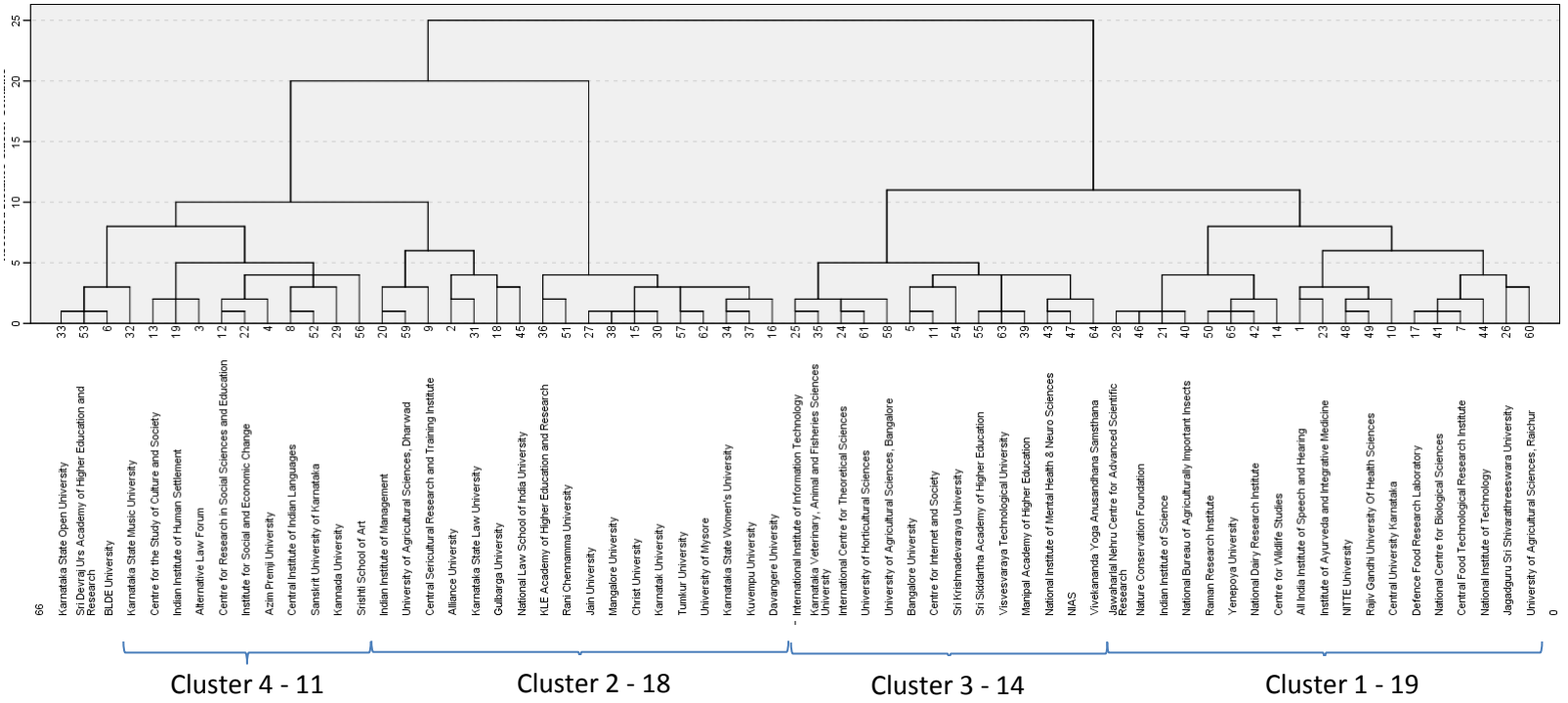
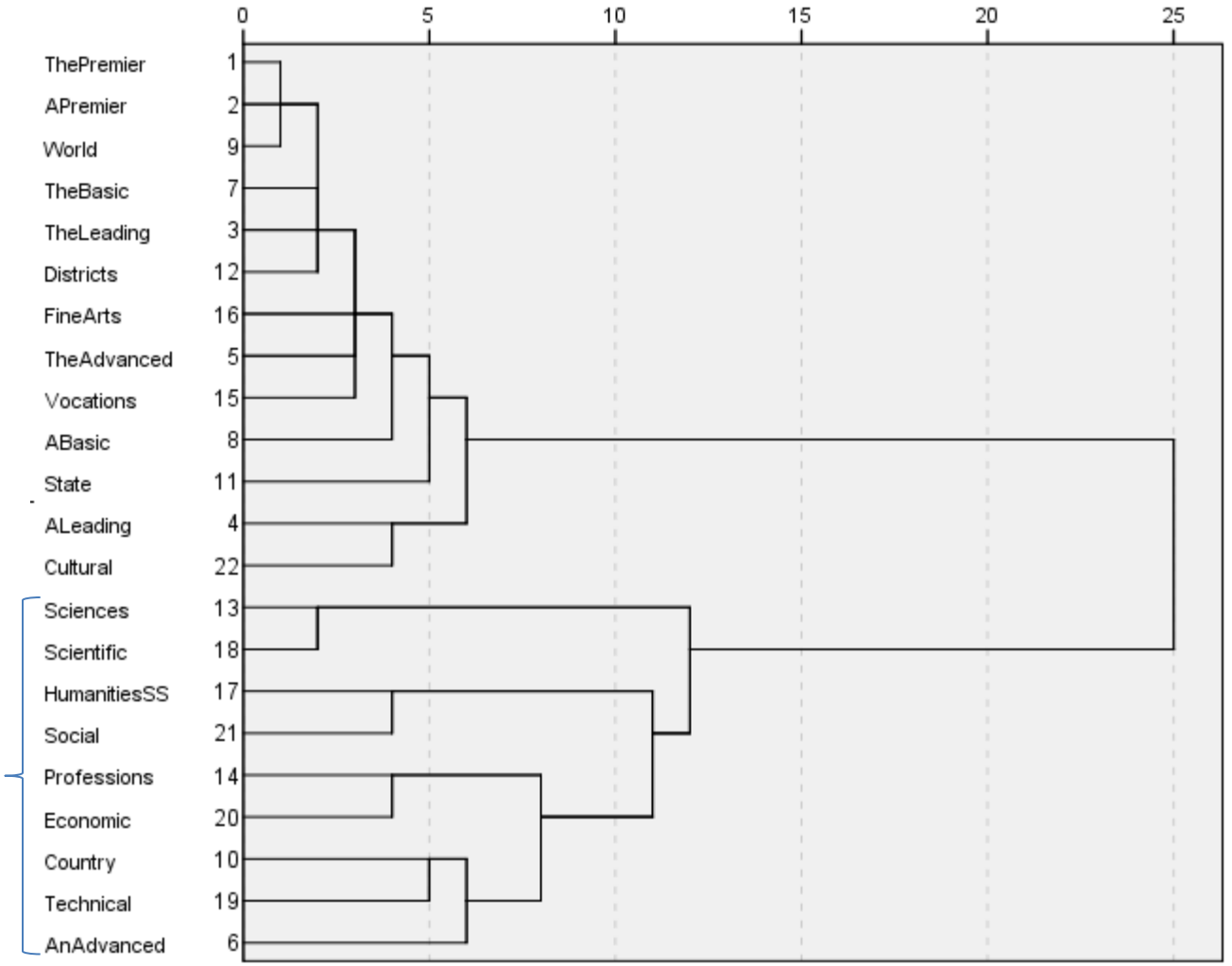


Figure 3-4: Institution Clusters based on the State-of-the-Practice of Research

	Realization								Scope				Focus					Outcome				
Cluster	The Premier	A Premier	The Leading	A Leading	The Advanced	An Advanced	The Basic	A Basic	World	Country	State	District(s)	Sciences	Professions	Vocations	Fine Arts	Humanities/SS	Scientific	Technical	Economic	Social	Cultural
1	0	0	4	5	6	0	1	3	0	17	1	1	17	9	1	0	3	19	9	1	5	2
2	0	0	1	6	2	4	2	3	1	11	5	1	2	9	4	5	10	2	3	11	15	9
3	0	0	0	0	0	14	0	0	0	13	0	1	13	6	2	1	6	11	10	2	8	3
4	0	0	0	3	0	4	1	3	0	0	9	2	11	0	0	1	10	11	0	2	11	1
Total	0	0	5	14	8	22	4	9	1	41	15	5	43	24	7	7	29	43	22	16	39	15



Archetype 1 in research: An advanced institution in the country for research in sciences, professions, and humanities/social sciences, for scientific, technical, economic, and social development.

Figure 3-5: Attribute Clusters based on the State-of-the-Practice of Research

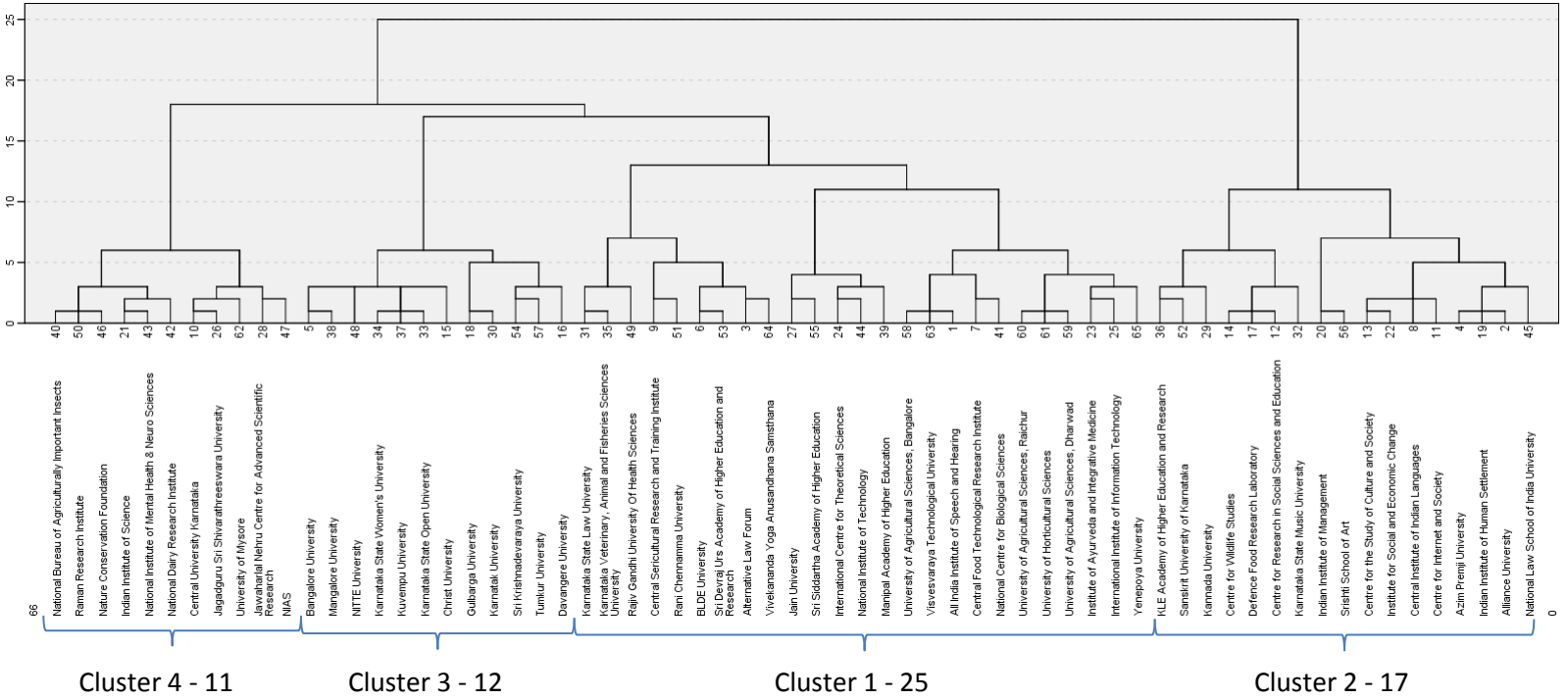


Figure 3-6: Institution Clusters based on the State-of-the-Practice of Education

	Realization								Scope				Focus					Outcome				
Cluster	The Premier	A Premier	The Leading	A Leading	The Advanced	An Advanced	The Basic	A Basic	World	Country	State	District(s)	Sciences	Professions	Vocations	Fine Arts	Humanities/SS	Scientific	Technical	Economic	Social	Cultural
1	0	0	0	10	2	5	3	5	1	10	12	2	16	22	13	2	5	21	18	14	17	5
2	1	2	1	1	0	8	1	0	0	11	3	0	2	6	3	6	9	0	1	7	11	10
3	0	0	1	0	1	3	4	3	0	0	8	4	12	10	0	4	12	9	1	7	11	0
4	0	0	0	2	1	4	0	4	0	11	0	0	11	2	0	1	3	11	2	0	5	0
Total	1	2	2	13	4	20	8	12	1	32	23	6	41	40	16	13	29	41	22	28	44	15

Archetype 3 in education: A leading institution in vocations for technical development.

Archetype 2 in education: An advanced institution in fine arts in the country for cultural development.

Archetype 1 in education: An institution in the state for education in sciences, professions, and humanities/social sciences, for scientific, economic, and social development.

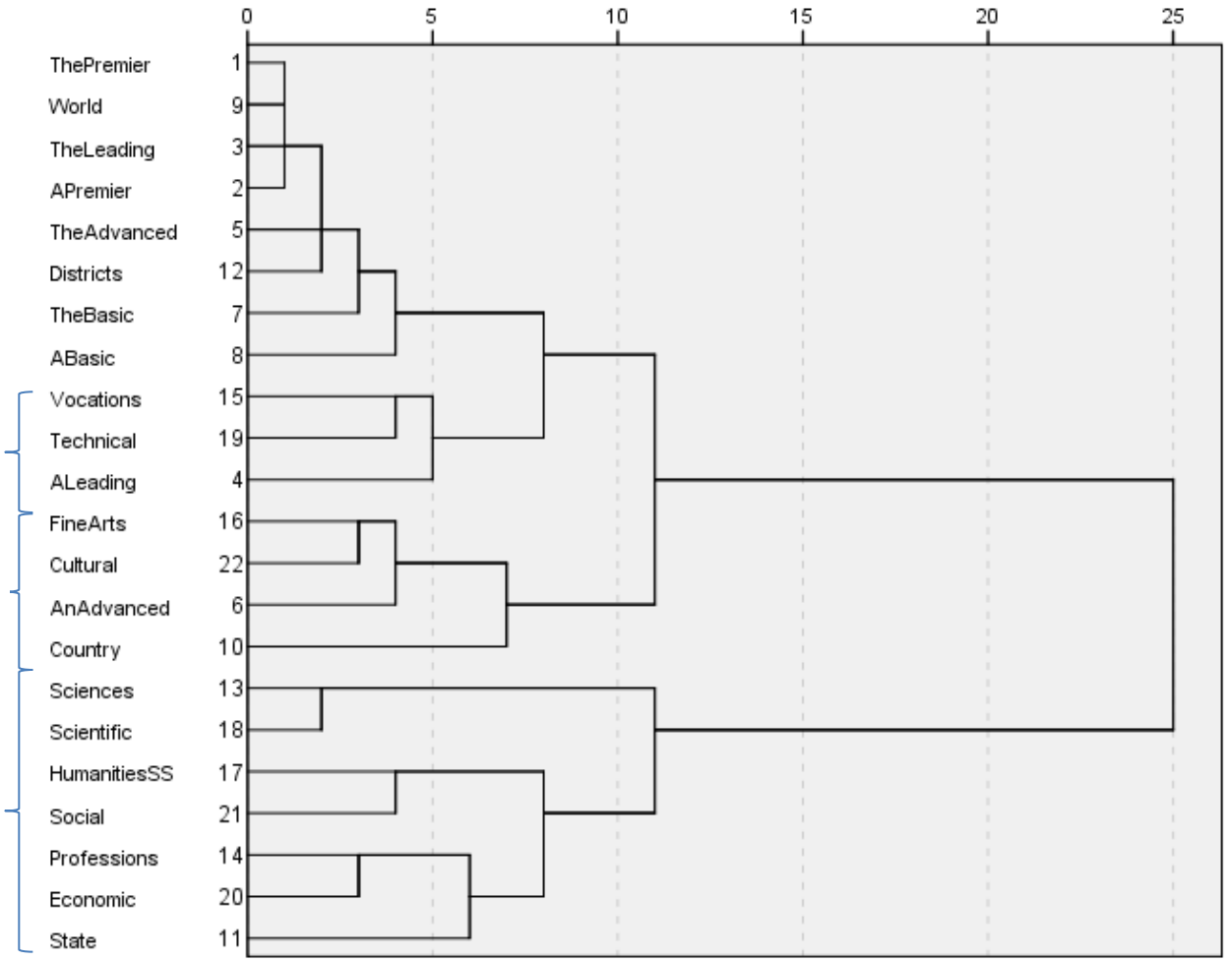


Figure 3-7: Attribute Clusters based on the State-of-the-Practice of Education

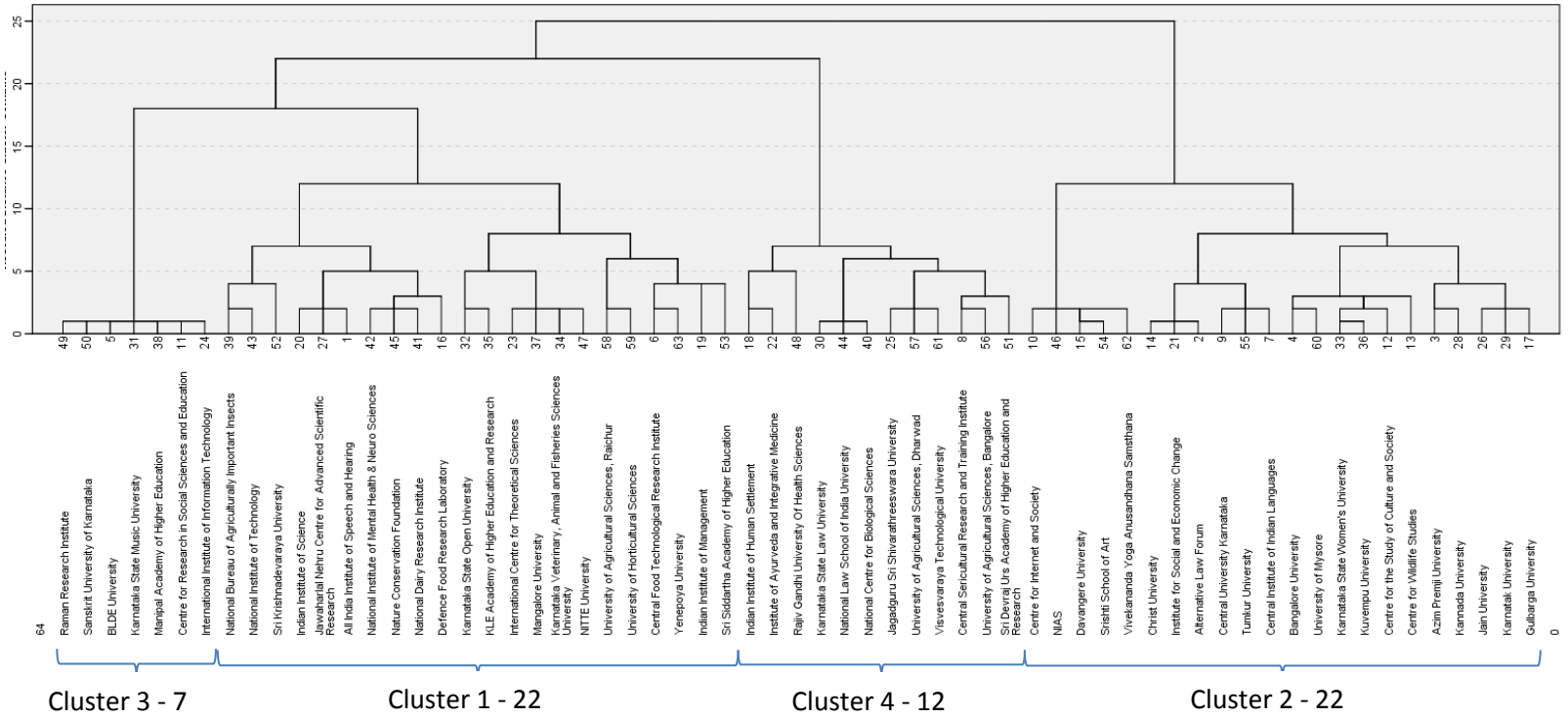


Figure 3-8: Institution Clusters based on the State-of-Practice of Service

	Realization								Scope				Focus					Outcome				
Cluster	The Premier	A Premier	The Leading	A Leading	The Advanced	An Advanced	The Basic	A Basic	World	Country	State	District(s)	Sciences	Professions	Vocations	Fine Arts	Humanities/SS	Scientific	Technical	Economic	Social	Cultural
1	0	0	3	4	3	2	2	8	0	10	8	4	19	11	2	1	5	16	9	5	16	0
2	0	0	0	2	0	6	4	10	0	3	13	6	7	1	4	1	19	4	1	3	22	14
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	11	1	0	0	2	9	1	3	12	7	2	3	2	7	3	9	3
Total	0	0	3	6	3	19	7	18	0	15	30	11	29	24	13	4	27	22	17	11	47	17

Archetype 2 in service: A basic institution in the state and district(s) for service in humanities and social sciences for social and cultural development.

Archetype 1 in service: An advanced institution for service in sciences, professions, and vocations, for scientific, technical, and economic development.

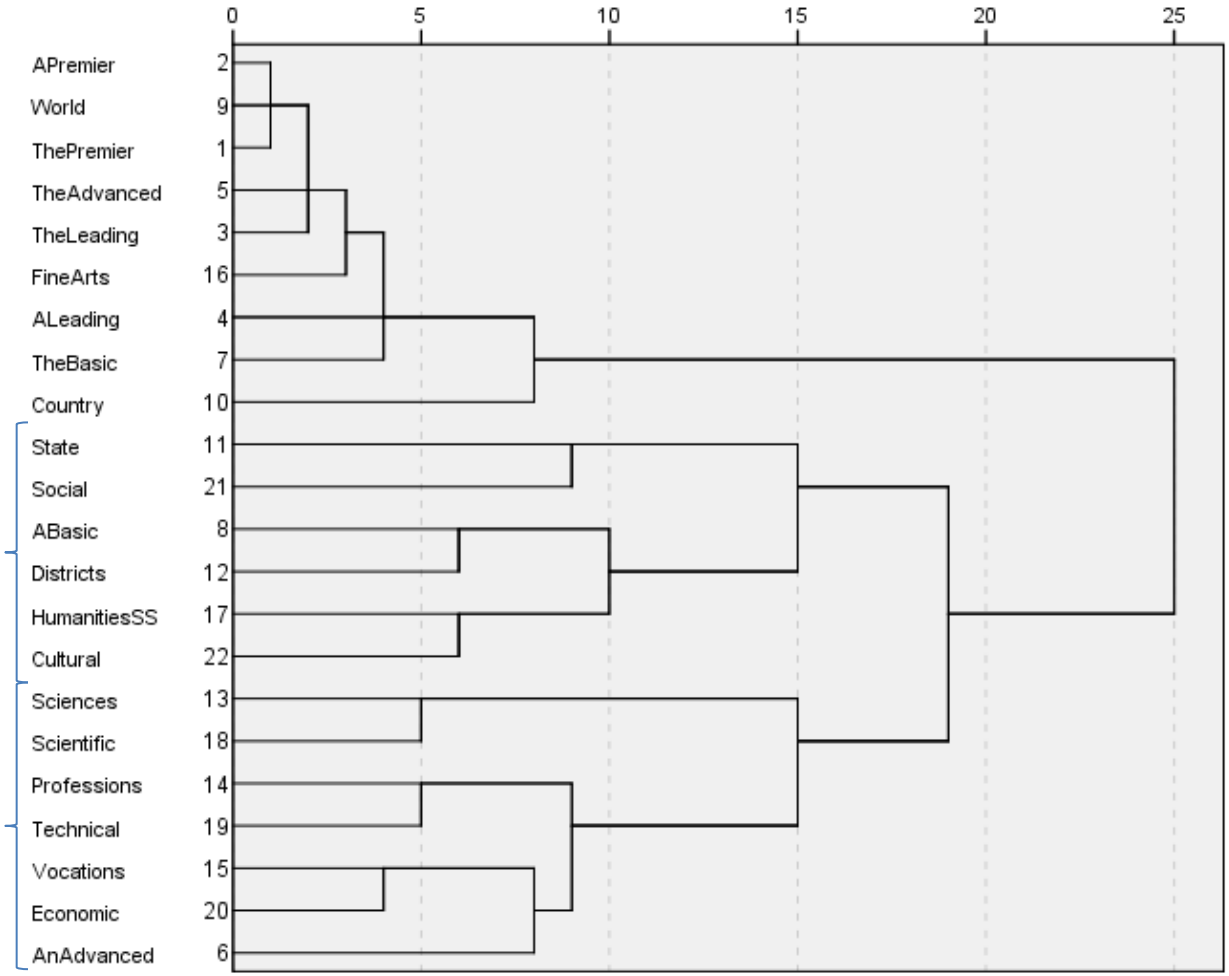


Figure 3-9: Attribute Clusters based on the State-of-the-Practice of Service

Discussion and Conclusion

The state-of-the-practice of the higher education system in Karnataka is better than the public and media perceptions of the same. While systematically collecting and studying the data about the 65 institutions in the course of mapping the state-of-the-practice we could not but notice the latent excellence of many institutions in research, education, and service. There were many occasions when our jaws dropped, literally, about the extensive research record of an institution, the journal another institution has been publishing for the past 25 years, and similar instances.

A major source of the misperceptions about the state-of-the-practice appears to be the weak projection of the institutional identity on the web, in the reports, and other sources of data. Part of this problem is reflected in the uneven data granularity (Figure 3-1) discussed earlier. The problem is compounded by the lack of organization of the information in the various media which limit their accessibility, despite their availability. When an institution does not project its own identity and provide data to support it, an external agent is likely to selectively fit the data to his or her own preconceptions based on their prior experience and expertise. While experience is good and expertise is better, evidence would be best to portray the state-of-the-practice.

Our analysis of the state-of-the-practice suggests that there are significant strengths and weaknesses in research, education, and service in the higher education system in Karnataka. Correspondingly, there are significant opportunities for and threats to improve the three functions. We will highlight the silos of strengths and weaknesses in the following and discuss the potential synergies between these silos in the next chapter. Last, we will discuss the characteristics of the Zotero knowledgebase we developed as the bases for continuing development and maintenance of the evidence.

Modest Realization

The Realization in the state-of-the-practice is very modest, especially framed in the context of developing world-class institutions and higher education system in Karnataka (Figure 3-3). The modal Realization in Research, Education, and Service is as An Advanced institution. In Research, the second modal Realization is as A Leading institution followed by A Basic one. In Service the second modal realization is as A Basic institution. Three of the 65 institutions fall into the Premier in Education, none in Research or Service.

The granularity, currency, quality, and quantity of data about the institutions may have skewed the realization to be a little lower than it is, in the aggregate. Better data in the future may shift the distribution a little, but it is unlikely to shift much at the higher end. Broadly, the data for institutions at the Premium end is much better than for those at the Basic end.

Global vs. Local Scope

The modal Scope is Country followed by State in Research and Education, and State followed by Country and District(s) in Service. Only one institution has a World Scope in Research and Education, and none in Service. Thus, overall the Scope of the state-of-the-practice is skewed with the maximum emphasis on the Country and lesser focus on the State and District(s) respectively, with almost no focus on the

World. The modal scope for three of the four Research clusters is the Country, and for the fourth cluster it is the State (Figure 3-4). The dominant archetype too is Country-focused (Figure 3-5).

The low frequency of institutions, clusters, and archetypes at the extremes of the Scope – World and District (s) – is an issue to be addressed in architecting the knowledge ecology. Both categories of institutions would be necessary, if one were to emulate the US model described in Chapter 2 (Figure 2-9). The distribution may vary between Research, Education, and Service as it does now. The Research institutions may be skewed towards the World end, the Education institutions balanced across, and the Service institutions skewed towards the District(s) end. Architecting such a system from the present would be a challenge for the policy makers.

Balancing the Functions

Institutions vary significantly in their practice of Research, Education, and Service. The aggregate variations are highlighted by the Figures 3-3, 3-4, 3-6, and 3-8 at the system level and the clusters level. In coding the state-of-the-practice we noted that an institution's profile with reference to the Realization, Scope, Focus, and Outcome could be very different for the three Functions. Specialized institutions, for example, are likely to focus narrowly whereas comprehensive ones are likely to focus broadly. Thus, balancing the Functions in the aggregate, at the systemic level, will require balancing the differentiation and integration of these functions within and across institutions. Thus a comprehensive institution whose three functions are coordinated is likely to be more effective in realizing the desired outcomes than the uncoordinated one. Similarly, a specialized institution in Research which collaborates with a complementary institution in Education or Service is likely to be more effective in achieving the desired outcomes for a knowledge society.

Non-Uniform Focus

The Focus on the Sciences, Professions, Vocations, Fine Arts, and Humanities/Social Sciences is uneven and varies significantly between Research, Education, and Service (Figure 3-3). Across all three Fine Arts gets the least focus, even less than Vocations. The Sciences and Professions dominate the Focus followed by the Humanities/Social Sciences. Further, the Focus of the fours Research, Education, and Service clusters are quite different. The diversity of Focus can be a strength and a weakness. As an indicator of differentiation among the institutions it can be a strength; as an indicator of a poorly integrated system it can be a weakness. We have not collected evidence of the level of integration among the institutions; our intuition is that it is low.

There are no normative standards for a balanced Focus. It has to evolve to suit the aspirations and the needs of the system. Thus, the non-uniform Focus in the state-of-the-practice can be a threat and opportunity. A threat – if it is not coordinated and controlled, resulting in a diverse non-synergistic system of higher education in Karnataka. An opportunity – if it is integrated and managed, resulting in a diverse synergistic system for higher education in Karnataka.

Differentiated Outcomes

The dominant Outcomes are Social and Scientific development, followed by Technical, Economic, and Cultural development (Figure 3-3). The emphases vary between Research, Education, and Service – the

most notable one being the dominance of Social development for Service. There is also considerable variation among the Research, Education, and Service based clusters vis-à-vis the Outcomes, indicating a finer differentiation among the institutions in terms of the Outcomes they seek for their Functions (Figures 3-4, 3-6, 3-8). For example, Research (Figure 3-4) clusters 1 and 2 are complementary in their outcomes – cluster 1 emphasizes Scientific and Technical Development, cluster 2 Social, Economic, and Cultural development.

The profile of outcomes in practice is a product of the institutions evolution to balance their aspirations with the needs of the environment. The differentiated outcomes could be a strength or a weakness, for the higher education system as a whole, depending upon how they are managed. It may be an indicator of diversity – a strength, or of divergence – a weakness. As with Focus, there are no norms for balanced Outcomes. Yet, one has to examine whether the present practice is appropriate. For example: should Scientific and Social development dominate Technical, Economic, and Cultural development? Shouldn't the system focus heavily on Economic development at a time when global economics has become the driving force behind all types of development?

Conclusion

The state-of-the-practice of the higher education institutions in Karnataka is good and could be better. The rich evidence, despite the difficulty of acquiring and organizing it, demonstrates significant (and sometimes unexpected) strengths and weaknesses. In concluding this chapter we will summarize the strengths and weaknesses of the system in terms of the Realization, Scope, Functions, Focus, and Outcomes.

1. The realization of the higher education system is modest and varied, but not ideally balanced, especially in the context of the global market for higher education. It is heavy in the middle but very thin at the ends – there are very few Premium and Basic institutions
2. Its scope is rich and diverse, but not well distributed. The dominant focus is at the middle, on the Country and the States, with far less focus on the Word and the District(s).
3. The emphases on the Functions are varied and diverse, in the aggregate as well as within clusters of institutions. Their profiles cut across the definitions of institutions as Specialized, Comprehensive, Research , Private, State, Deemed, and National/Central institutions as defined in the Glossary (Appendix B). This differentiation of institutions is a strength of the system; their lack of integration could be a weakness.
4. The Focus is varied but non-uniform and needs to be reassessed. The emphasis on the Sciences (hard and soft) and the Professions is high, on the Vocations and Fine Arts low. If one assumes that all the Focus disciplines are equally important for the development of a knowledge society, then clearly the state-of-the-practice is imbalanced. However, there is no empirical evidence to suggest the right balance; the state-of-the-practice can be a springboard for discussion and debate about the right balance.
5. The Outcomes are highly differentiated in the aggregate as well as by the three Functions. The differentiation itself is good but its effectiveness in the development of a knowledge society will depend upon their integration. Moreover the balance (or imbalance) between the different types of growth, their priority, and their sequence have to be debated and decided.

In the next concluding chapter of this report we will contrast the state-of-the-aspiration with the state-of-the-practice and highlight the gaps between them. We will discuss the potential consequences of the gaps for the development of a knowledge society in Karnataka and the strategies which can be used to bridge them. Finally, we will make a case for studying the state-of-the-need to develop a comprehensive strategy for higher education in Karnataka.

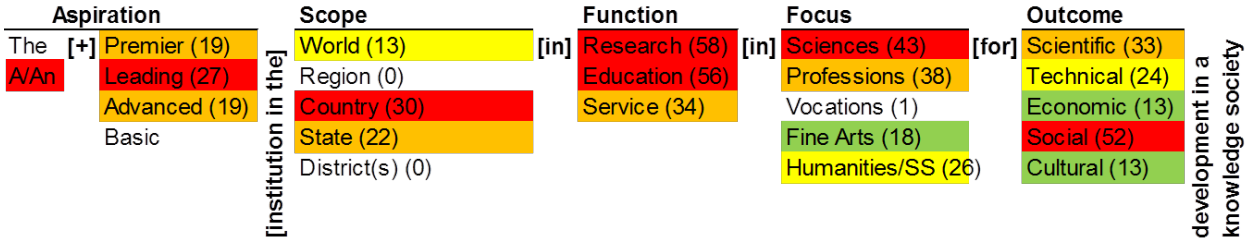
Chapter 4 Conclusion

Our objective is to map the state of higher education in Karnataka. We have mapped and described the state-of-the-aspiration in Chapter 2 and the state-of-the-practice in Chapter 3. We propose mapping the state-of-the-need as an extension to the present project. In concluding this report we will discuss:

1. The performance gaps between the two states;
2. The Zotero knowledgebase as a tool for ongoing monitoring the state of the system;
3. The proposal for mapping the state-of-the-need to complete the third and final leg of the project; and
4. The overall limitations, potentials, and conclusions of the project.

Performance Gap between the State-of-the-Aspiration and the State-of-the-Practice

We will analyze the performance gaps by comparing and contrasting Figures 2-2 and 3-3. They are presented together in Figure 4-1 below. We will discuss the Aspiration/Realization, Scope, Function, Focus, and Outcome gaps in sequence.



	Realization								Scope				Focus					Outcome				
Function	The Premier	A Premier	The Leading	A Leading	The Advanced	An Advanced	The Basic	A Basic	World	Country	State	District(s)	Sciences	Professions	Vocations	Fine Arts	Humanities/SS	Scientific	Technical	Economic	Social	Cultural
Research	0	0	5	14	8	22	4	9	1	41	15	5	43	24	7	7	29	43	22	16	39	15
Education	1	2	2	13	4	20	8	12	1	32	23	6	41	40	16	13	29	41	22	28	44	15
Service	0	0	3	6	3	19	7	18	0	15	30	11	29	24	13	4	27	22	17	11	47	17

Figure 4-1: Performance Gap

Aspiration/Realization Gap

The Aspiration exceeds the Realization, as perhaps it should be. There are fewer Premier and Leading institutions in practice than those who aspire to being so. Obversely, there are more Advanced and Basic institutions than suggested by the Aspirations. The modal aspiration is as A Leading institution; the modal realization is as An Advanced institution – a couple of steps lower on the scale. While fewer Premier institutions in practice may not be best for the knowledge ecology, more Basic institutions – even if not by design – may be good for the same. Thus there is a gap in the mode of the

Aspiration/Realization as well as the distribution – Realization is less than the Aspiration and distributed towards the Basic end.

Scope Gap

The Scope gap echoes the Aspiration/Realization gap. (Note Region was eliminated in coding the state-of-the-practice for no institution appeared to focus on a region of the world.) There are fewer World-scope institutions than aspire to be; there are more institutions with the Country, State, and District(s) as their scope. The greater focus on the State and District(s) in practice may be good for the knowledge ecology of the state; however, the lesser focus on the World would be a significant weakness in the ecology. Thus there is a gap in the mode of the Scope as well as the distribution – Realization is less than the Aspiration and distributed towards the District(s) end.

Function Gap

Research and Education are almost equally and highly emphasized in practice as it is in the aspiration; Service trails them in emphasis both in aspiration and practice. Education perhaps is a little more emphasized than Research in practice compared to their relative emphasis in the aspiration. Thus there isn't a significant gap in the mode and the distribution of the Functions; if there is one, Practice is skewed towards Service than the Aspiration.

Focus Gap

The focus on the Sciences and Professions in practice closely matches the aspiration in Research and Education, but not in Service – it is less. The focus on Professions in practice matches the aspiration in Education, but is much less in Research and Service. Vocations are emphasized more in practice than in the aspiration, while Fine Arts is emphasized less in practice than in the aspiration. Last, there appears to be little performance gap in the humanities/social sciences. Thus the portrait of the Focus performance gaps is complex. Amongst the five Focus areas, the most significant may be in the Vocations (more than the Aspiration) and in the Fine Arts (less than the aspiration).

Outcome Gap

The profile of Research outcomes in Practice emphasizes Scientific outcomes more and Social outcomes less than the outcomes in the state-of-the-aspiration. The profile of Education outcomes in Practice is closer to the aspiration profile, with a slightly higher emphasis on Scientific outcomes, less on Social outcomes, and quite a bit more on Economic outcomes. The profile of Service outcomes places significantly less emphasis on the Scientific and Technical outcomes than in the Aspiration. Thus there is mix of Outcome performance gaps with reference to the Research, Education, and Service functions.

Performance Gap – Summary

There are many performance gaps highlighted in Figure 4-1 and described above; some of them may be desirable and others undesirable. We have analyzed the gaps at the systemic level; one may analyze it at the cluster level and institutional level too. The data and the methods permit analysis at different levels of granularity. Thus, for example, the profiles in Figure 4-1 can be compared with the many individual cluster profiles presented in Chapter 3.

In addressing whether the performance gaps are desirable or undesirable one has to decide whether the aspirations themselves are appropriate – do they fit the need? Without a clear understanding of the needs of Karnataka to develop a knowledge society, the aspirations may be purely hypothetical or an arbitrary ideal. Tailoring practice to these aspirations may not be effective in transforming Karnataka into a knowledge society. It is for this reason we have proposed a study of the state-of-the-need as an extension of this project.

The Zotero Knowledgebase as a Tool for Ongoing Planning for and Monitoring the State of the System

Apart from the data and the analysis of the states of aspiration and practice we believe that a major contribution of this project will be the Zotero knowledgebase we have developed. It has all the data we have collected in mapping the states of the system. In the earlier chapters we have discussed the difficulties in collecting the data for mapping the system. These difficulties pose a significant barrier to strategy formulation and implementation based on current evidence rather than on anecdotal experience or individual expertise. In the following we will briefly describe how it can be used as a tool for ongoing planning for and monitoring of the state of the system.

The knowledgebase is comprehensive. It includes all the institutions studied and can include additional institutions. As such, it permits planning and monitoring based on evidence from the population rather than on a sample.

As of the date of the study the knowledgebase is current. It includes all the documents available to-date. New documents can be added to it conveniently. Moreover, the time-stamp on the documents will permit a longitudinal study of the evidence in the future.

The knowledgebase is collaborative: (a) all users can work with the same view synchronously and asynchronously; and (b) all users with writing rights can update the knowledgebase. While currently only the four researchers have full access rights to the knowledgebase it can be made available to the institutions and public for reading only, and to other researchers selectively with reading and writing rights.

The knowledgebase is transparent. The sources, citations, and documents are visible to all users. Such transparency is important to assure the reliability and validity of the maps generated from the data. It permits easy identification and correction of errors, update of data, etc.

The knowledgebase is replicable. It can be replicated to map, for example, the higher education systems of other states, regions, etc., and other types of systems too. Replicating it for other states and regions in the country will provide an excellent comparative base for developing the higher education system.

The knowledgebase is repeatable. This is a corollary to its transparency. The data and the mapping can be repeated by other users to assure the validity of the mapping, if necessary.

The knowledgebase is extensible in scope and time. In other words, it can grow with new institutions being added and data from subsequent time periods being appended. Thus, over time, it can provide a

solid foundation for evidence-based strategy formulation and implementation for the higher education system.

The knowledgebase is publishable. The public can be given access selectively or universally with individual read/write controls.

The knowledgebase is searchable. The current stack of data is large. It can become very large as more data are added. The built-in indexing and search capability will make it easier to locate individual items. The ability to search will make the data accessible to the users.

The knowledgebase is sustainable. The monetary cost and human effort required to maintain the knowledgebase is modest. It can be sustained as a valuable resource for a long time.

Thus, while we have not appended an extensive bibliography of all the documents to this report we would be glad to provide access to those to the institution representatives, policy makers, and decision makers.

Mapping the State-of-the-Need

Mapping the state-of-the-need will complete the three-part mapping of Karnataka's higher education system. The objectives of such an exercise would be to:

- Map the needs of the stakeholders in Karnataka with reference to its higher education system to transform the state into a knowledge society;
- Determine and analyze the gaps between the state-of-the-need and the state-of-the-aspiration and the state-of-the-practice (the latter having been currently mapped);
- Envision a higher education system to transform Karnataka into a knowledge society based on the analysis; and
- Formulate strategies to bridge the gaps between the three states and transform Karnataka into a knowledge society.

The method for mapping the state-of-the-need will be as follows:

1. Literature Review – Zotero knowledgebase of the state-of-the-need
2. Sample Design
3. Survey
    a. Preparation of questionnaire
    b. Pretest of questionnaire
    c. Finalization of questionnaire
    d. Administration and follow up of questionnaire
4. Coding
5. Analysis
6. Report on the state-of-the-need

Mapping the state-of-the-need will help us analyze the expectation gap (between need and aspiration) and the alignment gap (between need and practice) in addition to the performance gap (between aspiration and practice). A full understanding of these gaps will help develop a systematic strategy for Karnataka's higher education system to transform the state into a knowledge economy.

The Overall Limitations, Potentials, and Conclusions of the Project

The project will not be whole until the study of the state-of-the-need is completed. However, to bring this phase to a conclusion we will summarize the limitations, potentials, and the conclusions.

This may be one of the first studies of its kind to systematically and systemically map the higher education system in a state. It was difficult to obtain the data for mapping. A lot of data are not available; even when they are available they are not easily accessible; and even when they are accessible they are of uneven granularity and quality. We have sought to exhaustively collect and collate data from multiple sources in to a central knowledgebase. And thus, in mapping the states of thee aspiration and practice, we have tried to triangulate from different vantage points to maximize the validity of the maps. Yet, there could be errors of omission, commission, description, and interpretation. Should new data become available to discover and correct the errors, or to refine and modify the maps, the data can be incorporated in the knowledgebase, the coding updated, and the map changed. The same process can be adopted as new data becomes available over time.

Even with the limitations, the data are very rich and the present report is only the first layer of analysis. We believe that we can write a book based on the data collected but it will take time. The report presents the core insights given the deadline for the project. The subsequent papers and the book (we hope) will explore the data in fuller depth and detail.

We hope the maps serve as a mirror and not as an assessment or evaluation of the institutions and the system. We offer the maps as a description without any value judgment, and without any rationale or explanation for why it may be so. The institutions and the system have to debate these issues make judgments. As a mirror we hope that the maps provide feedback to the system and the institutions, and they in turn provide feedback to us if there are errors, inaccuracies, or missing details. If additional evidence will modify the maps we will incorporate the evidence in the knowledgebase and change the maps. An iterative feedback loop such as the above will help improve the quality of the maps and their understanding and use.

We would like to harness the potential of these maps to transform the higher education system in Karnataka (and other states, if replicated) through evidence-based, systematic, and systemic strategies. Longitudinally, the maps can not only help develop strategies but also assess, evaluate, and correct hem. The value of a longitudinal knowledgebase with the corresponding maps will be many times more than the cross-sectional maps we have presented in this study.

Thus, at its core, this project is a proof-of-concept of the value of mapping the higher education system in a state. It is not perfect but we believe it is good enough to demonstrate the feasibility of doing so. We have developed the nucleus of a knowledgebase for ongoing mapping and a method for doing so.

Recommendations to the Karnataka State Government

The evidence we have collected, we believe, is eye-opening. It validates some expectations and provides unexpected insights about the higher education system in Karnataka. It provides a synoptic picture of the state-of-the-aspiration and the state-of-the-practice. Above all, we believe, it provides an excellent foundation for developing evidence-based strategies to transform the higher education system in Karnataka. To sustain the long-term transformation both the knowledgebase and the associated analyses have to grow symbiotically. We recommend therefore that:

1. The knowledgebase should be maintained and developed as a policy-neutral repository;
2. The knowledgebase should be made freely available to the policy makers and scholars for analysis;
3. The knowledgebase should become the central repository of research, practice, and policy for the transformation of the higher education system in Karnataka; and
4. The knowledgebase should become the model for the transformation of higher education systems in the other states of India.

Appendix A – List of Institutions

1 Alternative Law Forum
2 Alliance University
3 Bangalore University
4 Sri Krishnadevaraya University (Bellary University)
5 BLDE University
6 Centre for Research in Social Sciences and Education
7 Central Food Technological Research Institute
8 Centre for Internet and Society
9 Central Institute of Indian Languages
10 Centre for the Study of Culture and Society
11 Central University of Karnataka, Gulbarga
12 Christ University
13 Davanagere University
14 Defence Research and Development Organisation
15 Gulbarga University
16 International Centre for Theoretical Sciences
17 Indian Institute of Management, Bangalore
18 Indian Institute of Science
19 Institute for Social and Economic Change
20 International Institute of Information Technology
21 Jagadguru Sri Shivarathreeswara University (JSSU)
22 Jain University
23 Jawaharlal Nehru Centre for Advanced Scientific Research
24 K.L.E Academy of Higher Education and Research
25 Kannada University
26 Karnataka State Open University
27 Karnataka State Women University
28 Karnataka State Law University
29 Karnataka State Music University
30 Karnataka University
31 Kuvempu University
32 Karnataka Veterinary, Animal and Fisheries Sciences University
33 Mangalore University
34 Manipal Academy of Higher Education
35 National Centre for Biological Sciences
36 National Bureau of Agriculturally Important Insects
37 Nature Conservation Foundation
38 National Dairy Research Institute
39 National Institute of Mental Health and Neurosciences
40 National Institute of Technology
41 National Law School of India University
42 NIAS, Bangalore
43 NITTE University
44 Rajiv Gandhi University of Health Sciences
45 Raman Research Institute

46 Rani Chennamma University
47 Sanskrit University of Karnataka
48 Sri Devaraj Urs Academy of Higher Education and Research
49 Srishti School of Art, Design and Technology
50 Sri Siddhartha Academy of Higher Education
51 Tumkur University
52 University of Agricultural Sciences, Bangalore
53 University of Agricultural Sciences, Dharwad
54 University of Agricultural Sciences, Raichur
55 University of Mysore
56 University of Horticultural Sciences, Bagalkot
57 Visvesvaraya Technological University
58 Vivekananda Yoga Anusandhana Samsthana
59 Azim Premji University (WIPRO University)
60 Yenepoya University
61 Center for Wildlife Studies
62 Institute of Ayuvrveda and Integrative Medicine
63 All India Institute of Speech and Hearing
64 Indian Institute of Human Settlement
65 Central Sericultural Research and Training Institute

Appendix B – Glossary

Aspiration	
The premier	The very best in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
A premier	One among the very best in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
The leading	The best in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
A leading	One among the best in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
The Advanced	The leading contributor in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
An advanced	A leading contributor in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
The basic	The leading participant in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
A basic	A participant in a function (research, education, service) with a specified scope (world, region, country, state, district(s)).
Scope	
World	Global.
Region	Region of the world. For example South Asia, South East Asia and so on.
Country	One particular nation. For example India, China, Indonesia and so on.
State	A political/geographical unit within a country with a group of districts (in India).
District(s)	An administrative/geographical unit(s) within a state.
Function	
Research	The discovery and dissemination of new knowledge through publications of papers, books, and monographs, presentations, conferences, etc.
Education	The propagation of knowledge through undergraduate, graduate, professional, and other programs.
Service	The application of knowledge to solving the problems of society through extension, social, clinical, consulting services and the like.
Focus	
Sciences	Focused on the 'hard sciences' such as physical, natural, biological, and the mathematical sciences.

Professions	Focused on the professions related to engineering, medicine, law, social work, nursing, applied health, and public health.
Vocations	Focused on the vocations related to engineering, medicine, law, social work, nursing, applied health, and public health.
Fine Arts	Focused on poetry, literature, painting, fine arts, and so on.
Humanities/ Social Sciences	Focused on the 'soft sciences' such as economics, psychology, sociology, political science, history, literature studies, philosophy, and linguistics.
Outcome	
Scientific development	Development of the society's capacity to generate and apply scientific knowledge for its own advancement.
Technical development	Development of the society's capacity to generate and apply technical knowledge for its own advancement.
Economic development	Development of the society's capacity to generate and apply economic knowledge for its own advancement.
Social development	Development of the society's capacity to generate and apply social knowledge for its own advancement.
Cultural development	Development of the society's capacity to generate and apply cultural knowledge for its own advancement.
Knowledge Society	A society based on systematic and ongoing generation and application of knowledge for its own development.
Categories of Universities and University-like Institutions	
Specialized	University/university like institutions which offer programs specialized in a topic, subject, region, etc.
Comprehensive	University/university like institution which provides/offers a wide range of programs from undergraduate to doctoral, in a broad range of disciplines.
Research	University/university like institution established expressly for the purpose of advancing research in a subject, field, topic, etc.
Private	University/university like institutions established by the Karnataka State (Private) Universities Act, 2010 and/or established by private trust/association. (Approved by concerned regulatory bodies in the country (UGC, AICTE and so on).
State	Universities/university like institutions governed by the State government (Karnataka), established by the Karnataka State Universities Act and other specific laws, respectively..
Deemed	University/university like institution being granted the autonomy by the Department of Higher Education on the advice of the UGC, under Section 3 of the UGC Act, in the state of Karnataka.
National/Central	Universities/university like institutions established by an act of Parliament and/or governed by relevant central ministry/ministries.

Appendix C – Letter to Vice Chancellors and Registrars

July 30, 2012

«Full_Name»
«Job_Title»
«AddressBlock»

Dear Sir/Madam:

We would like to request information about your institution for our project titled "Higher Education System for a Knowledge Society in Karnataka," funded by the Karnataka Jnana Aayoga (Karnataka Knowledge Commission), Government of Karnataka. The research is being conducted by the Higher Education Innovation & Research Application (HEIRA) at the Centre for the Study of Culture and Society (CSCS), Bengaluru. I am a Research Fellow at the Center and recently retired Head of the Department of Information and Decision Sciences, College of Business Administration, University of Illinois at Chicago.

We would appreciate electronic copies (preferable) or hard copies of the following:

1. Latest available NAAC/AICTE/IMA accreditation report;
2. Latest available annual reports for three years; and
3. Latest available AQAR/IQAC/AAA reports.

We have diligently looked for these reports on the web but may have missed them. If they have been posted please let us know the URL so that we may download them directly. Please mail the hard copies to Higher Education Innovation & Research Application (HEIRA), Centre for the Study of Culture and Society (CSCS), No. 827, 29th Main Road, Poornaprajna HBCS Layout, Uttarahalli, Bangalore – 560061.

We have sent a copy of this request by regular mail too and will also follow up with a phone call in the next couple of days. If you have any questions please e-mail me at prasad@uic.edu or call me at +91-80-26423002, 26423266/67/68.

We would like to share the results of our study with you, discuss them, and obtain your comments. I hope we can do so in August 2012, soon after the first draft of the results is completed.

We hope you can share the information we have requested as soon as possible. We would appreciate it very much.

Best regards,

Dr. Arkalgud Ramaprasad
Research Fellow, CSCS
Visiting Professor, University of Miami, Coral Gables, Florida, USA
Emeritus Professor, University of Illinois at Chicago, Chicago, IL USA

HEIRA
Higher Education Innovation & Research Applications

Centre for the Study of Culture and Society
CSCS

July 30, 2012

«Full_Name»
«Job_Title»
«AddressBlock»

ಮಾನ್ಯರೇ,

ಕರ್ನಾಟಕ ಜ್ಞಾನ ಆಯೋಗ, ಕರ್ನಾಟಕ ಸರ್ಕಾರ ಇವರ ಸಹಕಾರದೊಂದಿಗೆ ಮತ್ತು ಸೆಂಟರ್ ಫಾರ್ ದಿ ಸ್ಟಡಿ ಆಫ್ ಕಲ್ಚರ್ ಅಂಡ್ ಸೊಸೈಟಿ ಆಶ್ರಯದಲ್ಲಿ ನಡೆಯುತ್ತಿರುವ "ಕರ್ನಾಟಕದ ಜ್ಞಾನ ಸಮಾಜದ ಅಭಿವೃದ್ಧಿಗಾಗಿ ಉನ್ನತ ಶಿಕ್ಷಣ ವ್ಯವಸ್ಥೆ" ಎಂಬ ಸಂಶೋಧನಾ ಕಾರ್ಯಕ್ಕೆ ನಿಮ್ಮ ನೆರವನ್ನು ಕೋರುತ್ತಿದ್ದೇವೆ.

ನಿಮ್ಮ ಸಂಸ್ಥೆಯ ಕುರಿತು ಮಾಹಿತಿ ಕಲೆಹಾಕಲು ಈ ಕೆಳಕಂಡ ಮಾಹಿತಿ ಮೂಲಗಳನ್ನು ಒದಗಿಸಬೇಕೆಂದು ವಿನಂತಿಸುತ್ತೀದ್ದೇವೆ.

1. ಈಚಿನ **NAAC/AICTE/IMA** ವರದಿಗಳು,
2. ನಿಮ್ಮ ಸಂಸ್ಥೆಯ ವಾರ್ಷಿಕ ವರದಿಗಳು, ಮತ್ತು
3. **IQAC/AQAR/AAA** ವರದಿಗಳು.

ಈ ಮೇಲ್ಕಂಡ ವರದಿಗಳನ್ನು ಕಲೆಹಾಕುವುದಕ್ಕಾಗಿ ನಾವು ನಿಮ್ಮ ಸಂಸ್ಥೆಯ ವೆಬ್ ಸೈಟ್ ತಾಣವನ್ನು ಪರೀಶೀಲಿಸಿದ್ದೇವೆ. ಅಲ್ಲಿರುವ ಮಾಹಿತಿಗೆ ಪೂರಕವಾಗಿ ಈ ವರದಿಗಳು ನೆರವಾಗಲಿವೆ. ಡೌನ್ ಲೋಡ್ ಮಾಡಬಹುದಾದ ಬೇರೆ ಮಾಹಿತಿ ಇದ್ದಲ್ಲಿ ದಯವಿಟ್ಟು ಈ ಕುರಿತು ನಮಗೆ ಮಾಹಿತಿ ನೀಡಿ.

ತಾವು ಈ ಮೇಲ್ಕಂಡ ವರದಿಗಳನ್ನು **"Higher Education Innovation & Research Application (HEIRA), Centre for the Study of Culture and Society (CSCS), No.827, 29th Main Road, Poornaprajna HBCS Layout, Uttarahalli, Bangalore-560 061"** ವಿಳಾಸಕ್ಕೆ ಕಳುಹಿಸಿಕೊಡಬೇಕೆಂದು ವಿನಂತಿಸುತ್ತಿದ್ದೇವೆ.

ಈ ಪತ್ರದ ಒಂದು ಪ್ರತಿಯನ್ನು ಅಂಬೆಯ ಮುಖಾಂತರ ತಮ್ಮ ಕಛೇರಿಗೆ ರವಾನಿಸಲಾಗಿದೆ. ಈ ವಿಷಯದ ಕುರಿತು ತಮ್ಮೊಂದಿಗೆ ದೂರವಾಣಿಯ ಮೂಲಕ ಸಂಪರ್ಕಿಸುತೇನೆ. ನಮ್ಮ ಈ ಸಂಶೋಧನಾ ಕಾರ್ಯದ ಪ್ರಗತಿ, ಫಲಿತಾಂಶವನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಹಂಚಿಕೊಳ್ಳುವ ಅವಕಾಶ ನೀಡುವಿರಿ ಎಂದು ನಂಬಿದ್ದೇನೆ.

ನಿಮ್ಮ ಸಹಕಾರ ಮತ್ತು ಪ್ರೋತ್ಸಾಹಗಳ ನಿರೀಕ್ಷೆಯಲ್ಲಿ,

Ramaprasad

ಡಾ: ಅರಕಲಗೂಡು ರಾಮಾಪ್ರಸಾದ
Research Fellow, CSCS
Visiting Professor, University of Miami, Coral Gables, Florida, USA
Emeritus Professor, University of Illinois at Chicago, Chicago, IL USA