

THE KNOWLEDGE CITY INDEX: A CASE STUDY OF MYSORE

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Abstract - This article presents the initial results of a wider research that intends to investigate the idea of a knowledge city, create knowledge city frameworks that may be applied to developing countries, and assess Mysore's status as a knowledge city. This study's knowledge city index (KCI) structure is presented in this article, along with an analysis of Mysore's standing as a knowledge city based on KCI's indicators. Reviews of previous research on the idea of knowledge cities as well as various measurements, indices, and statistics on Mysore City's historical and present intellectual capital were included in the study. Based on the preliminary results, this study concludes that Mysore can be positioned as a knowledge city and that it can transition to a knowledge-based economy by concentrating on the right areas. This will allow the city to maintain its rich cultural legacy while simultaneously promoting socioeconomic development.

Key Words: knowledge-based development in India; intellectual capital of cities; knowledge city; sustained urban development; knowledge city framework; knowledge city index; KCI.

1. INTRODUCTION

The goal is to turn the cities that make up these countries into hubs for knowledge-based economies. This is why countries are concentrating more on becoming information societies or knowledge economies. A knowledge economy is one that prioritizes the creation and utilization of knowledge for financial gain (Knowledge Economy, 2010). Carrillo ('The MAKCi Awards', 2010) provides a more precise definition of a knowledge city as one in which the local population uses a balanced and sustainable method to identify and grow their capital system.

This implies that the populace actively participates in the city's growth. Mysore, a city in Southern India that was once the capital of the Wodeyar-ruled Kingdom of Mysore, is well-known for its towering architecture, wide, shaded avenues, rich legacy, exquisite palaces, exquisitely designed gardens, and revered temples. Mysore's position in relation to other Indian cities is indicated by its ranking as the second biggest city in the state of Karnataka. It is renowned across the world for its luxurious silk and exotic sandalwood. Its regal palaces,

towering gardens, and magnificent temples create a lasting effect on guests. The town of Mahishasura, the demon king who is said to have resided here, is where the term "Mysore" originates. The stunning Chamundi hills signify Goddess Chamundeshwari's triumph over him.

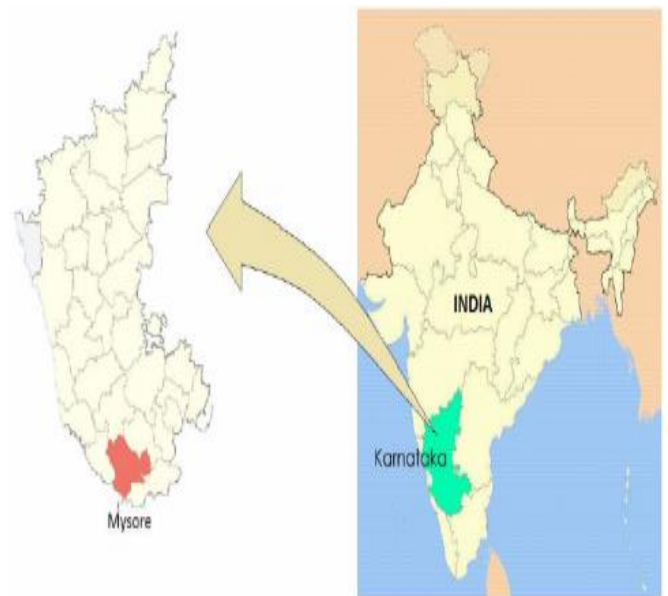


Fig -1: Geographical location of the city of Mysore

The study and results of a project that is now underway to create a framework comprising the essential characteristics of a knowledge city in the context of developing countries, like India, are presented in this article. Mysore will be analyzed and placed according to these indicators. Important components that raise a city's knowledge value were determined and organized by including them into the suggested framework. This paper's subsequent parts outline the framework created, the knowledge city index (KCI), and make an assessment of Mysore's standing as a knowledge city.

2. BACKGROUND

This research is primarily inspired by the enormous desire for sophistication among humankind and aims to

comprehend the manifestations of knowledge throughout a wide swath of human habitation that have been mainly intercepted by current technology. There are two categories of knowledge: explicit and tacit, according to the United Nations (2005) in the study "Understanding Knowledge Societies" that was filed by the Department of Economic and Social Affairs. As opposed to tacit knowledge, which is an intangible that comes from experience, expertise, insights, intuitions, perceptions, and personal judgment, explicit knowledge may be systematically represented by a language, integrated, stored, retrieved, and transferred using a variety of ICT devices. According to the United Nations (2005), the two resources support one another in the process of producing knowledge in large quantities.

A civilization is referred to be a "knowledge society" if it advances concurrently with the advancement of knowledge. The foundation of the "knowledge economy" is made up of the byproducts of knowledge production that go through the phases of creation, distribution, and utilization. As a result, a knowledge city is defined as a region with a growing knowledge society and a robust knowledge-based economy.

A city that cultivates knowledge, has a knowledge-based economy, and offers an atmosphere that encourages the development and sharing of information is referred to as a knowledge city. Restoration of cities and urban settlements, which may serve as knowledge centers, is the first step toward the establishment of a knowledge economy. This calls for a significant overhaul and fortification of the essential elements that comprise a knowledge city. People who live in a knowledge city feel more connected to the city and more like owners since they are actively involved in its growth and may freely express their opinions and complaints in public. Put another way, the city's residents start to actively participate in its growth.

Carrillo (2006) goes on to say that there are 65 similar urban development projects underway globally. Barcelona, which won the title of Most Admired Knowledge Metropolis Region in 2009 (The Most Admired Knowledge City: Report, 2009), is one of the well-known knowledge city initiatives. The Barcelona administration set out to promote Barcelona as a knowledge city by protecting the existing culture and emphasizing further growth, believing that culture and development are connected. In order to create a knowledge city, the government therefore concentrated on the following components (Amidon and David, 2004):

1. Tools that enable individuals to get knowledge a system of public libraries
2. All residents having access to modern communication technologies
3. Cultural amenities and services with a primary focus on education

4. A reading proficiency comparable to the average for Europe
5. A system of educational institutions linked to creative teaching
6. A regard for the variety of cultural practices of its people
7. Civic hubs that welcome diversity and encourage in-person interactions; the provision of the means by which people from various regions may express themselves; and instruments to facilitate access to information.

Melbourne, Manchester, Dublin, and other well-known knowledge cities have made amazing strides in their urban, economic, and social growth. In order to position itself as a hub for learning and knowledge production, Melbourne places a major focus on the development of a critical mass for managing a robust innovation culture, as well as providing excellent living conditions to attract and retain knowledge workers (Knowledge Melbourne – An Introduction, 2007).

The goal of Dublin's ten-point plan, "Developing a Knowledge City Region - A Ten Point Plan," (2008), is to hasten the development of the region's capitals of infrastructure, education, innovation, and entrepreneurship. By putting the public and commercial sectors in a mutually advantageous position to sustain a strong economy resilient to global challenges, the Manchester Knowledge Capital Team is strengthening the city's strategic intelligence (Leading Change, n.d.).

Though the phrase "knowledge city" is well-known in the West, in Indian culture it simply refers to the physical concentration of IT businesses and special economic zones (SEZs). As a result, several "knowledge city" regions have emerged, housing a variety of information-intensive and knowledge-based businesses. It is important to understand that SEZs, IT firms, and other businesses are not what make up a knowledge city in and of itself; rather, they are an essential component of the city of knowledge.

As the birthplace of literature, music, dance, art, and education, Mysore is home to notable figures from a wide range of disciplines and has a rich cultural and intellectual legacy. After decades of government control and centuries of kingly reign, Mysore has earned several firsts in a variety of sectors. One of the first of its type, the City Improvement Trust Board (CITB) was founded in 1903 by His Highness Maharaja Nalvadi Krishnaraja Wodeyar and was distinguished by its unique blend of humanitarianism and creative design. The University of Mysore was established as the first university in the state of Karnataka, the sixth in all of India, and the first institution outside of the purview of the British Administration.

Among the biggest and most varied technological laboratories worldwide is the Central Food Technological Research Institute (CFTRI). In addition, Mysore holds the distinction of giving rise to several schools of thought and artistic movements in a variety of fields, including Mysore yoga and Mysore painting.

People all throughout the world are aware of the distinctive brand value that Mysore possesses. The city has the potential to become a model knowledge city if it adopts a methodical strategy to developing a knowledge-driven economy. There appears to be a strong need to create a framework that can help manage knowledge at the city level in the Indian setting and that can be adapted to other developing countries, as the idea of knowledge-based development gets traction in the West.

Rich in culture and increasingly in demand as a centre for education, Mysore was an obvious option. This signaled the start of the NavaMysuru initiative, which stands for "new" Mysore and intends to establish Mysore as a knowledge metropolis. A key component of this continuing effort is the development of a framework known as the KCI, which will undergo continuous improvement until it reaches a comprehensive state. With the frameworks now in use emphasizing development in underdeveloped countries based on culture. In order to realize knowledge-based growth, the project also intends to work in conjunction with the municipal government and other important stakeholders, allocating all available resources in that direction. KCI provides measures designed for knowledge-based regions and areas, with an emphasis on measurements created with Western society's circumstances as the baseline.

The NavaMysuru project's study and conclusions are presented in this document. This paper's subsequent parts outline the framework that was created and provide an example of a knowledge city—Mysore.

3. THE STUDY

In this section of the paper, the research questions and methodology are defined. Two frameworks that highlight the different aspects of a city that are crucial to its development as a knowledge city are presented, followed by a framework created specifically for this study that analyzes Mysore's status as a knowledge city. The following are the study's research questions:

In order to facilitate the analysis of a city's position relative to other knowledge cities, the World Capital Institute and Teleos developed the widely accepted Most Admired Knowledge City (MAKCi) framework (The Most Admired Knowledge City: Report, 2009), which divides a city's assets into eight categories: identity capital, intelligence capital, relational capital, financial capital, human individual capital, human collective capital, instrumental-material capital, and instrumental-knowledge capital.

The "KCI" framework, which was created as part of this study, contains indicators that are essential to a city's continued existence and general progress. Our goal is to continuously refine the framework by adding suitable characteristics that measure a city's status as a knowledge city. These cities will then be ranked according to the KCI.

Indicator	Sub-parameters	Motivation for inclusion in KCI framework
Education indicator	<ul style="list-style-type: none"> Literacy rate Formal education No. of schools and colleges Dropout rates Student-teacher ratio No. schools with computer Basic facilities in schools Enrolment Pass percentage in exams Traditional/cultural education <ul style="list-style-type: none"> Music schools Ayurveda colleges Yoga teaching centres Art schools Sanskrit colleges Dance schools Public libraries Acting schools/performing theatres Academic events <ul style="list-style-type: none"> Conferences/workshops Exhibitions 	Formal educational institutes such as schools, under-graduate/post-graduate colleges and the university, play a major role in nurturing and disseminating knowledge to citizens, creating generations of informed citizens of a city. Apart from formal schooling, developing a citizen's cultural and traditional knowledge base is equally important to a knowledge city. Institutes that focus on providing education in the domains of art and culture, including Sanskrit, yoga, etc., form the traditional cultural educational institutes. This indicator can be mapped to the instrumental-intangible capital and the intellectual aspect in the human-individual capital of the MAKCi framework.
Innovation and research indicator	<ul style="list-style-type: none"> No. of PhDs No. of patents Research publications Geographical indications (GI) Centres of research and development Tertiary education enrolment 	Innovation leads to creation of new knowledge and in turn, forms one of the driving forces of a knowledge city. Thus, centres focusing on creation of new knowledge are categorised as innovation and research indicators. This indicator can be mapped on to the human-collective capital of the MAKCi framework.

Fig-2: Indicators of the KCI framework

Indicator	Sub-parameters	Motivation for inclusion in KCI framework
Information access indicator* (*formerly network infrastructure indicator)	<ul style="list-style-type: none"> Access to internet <ul style="list-style-type: none"> Domestic subscriptions Commercial subscriptions Mobile telephony <ul style="list-style-type: none"> Post-paid subscription Pre-paid subscription Traditional telephony 	Existence of an informed population in the rest of the world makes no sense if there is a lack of an informed citizenry within the city. The internet and telephony enables citizens to be connected to each other and to the world, thereby increasing their awareness. Thus, internet and telephony are classified under the network infrastructure indicators. This indicator can be mapped on to the instrumental-material capital of the MAKCi framework.
Culture, heritage and tradition indicators	<ul style="list-style-type: none"> Geographical indications (GIs) Festivals Museums Dance, music, painting exhibitions and other cultural events Books purchased – literary works Temples/religious institutions Popular dancers, musicians, poets, writers Book releases Movie theatres Handicraft centres 	Only a balance between a city's cultural preservation as well as technological advancement, can lead to the true growth of a city. Hence, the various cultural practices, as well as activities by organisations, focusing on preservation of traditional beliefs and cultural practices, are classified under this indicator. This indicator can be mapped on to the identity capital, the intellectual aspect of the human-collective capital of the MAKCi framework.
Tourism indicator	<ul style="list-style-type: none"> No. of tourists Foreign tourists Travel agencies Hotels and resorts Hotel customers Tourism helpline and inquiry centres No. of VIP/VVIP visitors 	Tourism assumes the role of a critical agent, which performs the functions of showcasing the city to the world. It further contributes to improving its economy, by often paving the way for a business investment in that region on the city itself. This indicator can be mapped on to the relational capital of the MAKCi framework.

Fig-3: Indicators of the KCI framework

Indicator	Sub-parameters	Motivation for inclusion in KCI framework
Economic indicator* (*formerly business and commerce indicator)	<ul style="list-style-type: none"> Industries – small, medium and large-scale Sector-wise man power Blue-collar and white-collar workers Average daily wage of blue-collar/white-collar workers Investments Exports Industry sector-wise revenue Banks/financial institutions Leans Bank revenues Organised/un-organised retail Per-capita income BPL card holders Entrepreneurship <ul style="list-style-type: none"> Incubation centres Venture capitalists New enterprises 	Establishment of any successful city depends on a stable economical foundation, and the economic aspects of the city are classified under the business and commerce parameter. This indicator can be mapped on to the financial capital and the entrepreneurial aspect of the human-collective capital of the MAKCi framework.
Civic administration and infrastructure indicator	<ul style="list-style-type: none"> Government bodies Non-governmental organisations Development plans/policies/frameworks Environment Developmental activities Transportation Health and sanitation Roads Other civic amenities Corruption levels Shams 	This indicator covers the analysis of work done by representatives of the citizens in the city, i.e., government bodies. To ensure that the government trends the appropriate path, and that equal focus is rendered by these government bodies to all areas of concern in a city, the Non-Governmental Organizations (NGOs) play a very significant role. Hence, this indicator focuses on analysing a city's government and non-government bodies, infrastructure and transportation (which form the basic necessities of any city), are classified under this indicator. This indicator can be mapped on to the instrumental-intangible capital, instrumental-material capital, the organic aspect of the human-collective capital and the intelligence capital of the MAKCi framework.

Fig-4: Indicators of the KCI framework

4. FINDINGS

Primary and secondary sources were used to gather data for the indicators used in this study. The paper's data gathered from these sources is presented in this section. Only certain sub-parameters of each indicator are included in the data gathered from secondary sources.

4.1.1 Innovation and research indicators

One of the main factors propelling a knowledge city is innovation, which produces knowledge. Renowned research institutes in Mysore, India, have made significant contributions to the advancement of knowledge. The significant research institutes in Mysore city are listed in Table 3. It is noteworthy to mention that Mysore holds the unique distinction of being home to both of India's food technology laboratories, CFTRI and DFRL. In addition to these esteemed research institutions, a number of University of Mysore departments do research across a range of fields, contributing to the body of knowledge.

4.1.2 Information access indicators

Creating an informed citizenry is largely dependent on communication and connectedness among city residents.

4.1.3 Culture, heritage and tradition indicators

With the rich cultural heritage, Mysore has the distinction of having maximum number of GIs in the state of Karnataka, and these are listed in below

No.	Geographical indications	Goods/category
1	Mysore Silk	Handicraft
2	Mysore Agarbathi	Manufacture
3	Mysore Rosewood Inlay	Handicraft
4	Mysore Sandalwood Oil	Manufacture
5	Mysore Sandal Soap	Manufacture
6	Mysore Traditional Paintings	Handicraft
7	Mysore Betel Leaf	Agriculture
8	Mysore Jasmine	Agriculture
9	Ganjifa Cards of Mysore	Handicraft

Fig-5: Geographical Indications of Goods (2008)

4.1.4 Tourism indicators

Since the 1990s, Mysore has become a more sought-after travel destination. A large portion of this may be attributed to the Mysore Dasara celebrations as well as the region's culture, history, spirituality, Ayurveda, and yoga. This was made clear in 2006 when more people were recorded at Mysore Palace than at the Taj Mahal, India's most famous tourist attraction, according to the Archaeological Survey of India (quoted in "Mysore Palace beats Taj Mahal in popularity," 2007).

The abundance of tourist attractions in and around Mysore city enhances the city's potential as a tourism destination. The Mysore Palace is the most visited location in the city of Mysore. However, the Chamundi Hills are, statistically speaking, the most well-liked tourist site in Mysore city due to the high number of devotees that visit the Chamundeshwari Temple atop Chamundi Hills from all over India. The second most popular tourist site is the Chamarajendra Zoological Gardens, sometimes referred to as the "Mysore Zoo" (conversation with the Joint Director, Department of Tourism, Mysore, Personal Communication, November 2009).

4.1.5 Economic indicators

Mysore Economic Conference	1911, under the then Maharaja, Krishnaraja Wodeyar IV
Mysore Sandalwood factory	Established 1917
Sri Krishnarajendra (K. R) Mills	Established 1920
Ideal Jawa (India)	Established 1960, in partnership with Jawa Motorcycle company, Czechoslovakia
Dedicated industrial areas in Belagola, Belawadi, Hebbal and Hootagalli	Established by Karnataka Industrial Areas Development Board (KIADB)
Medium and large-scale industries	Currently 60, with an approximate workforce of 23,000; Investment approximately USD 720 million(DIC, 2009)
Tourism	Major economic pillar of Mysore; close to 2.5 million tourists visit Mysore each year
Entrepreneurship: Incubation facilities and training centres	Science and Technology Entrepreneurship Park (STEP) – Sri Jayachamarajendra College of Engineering Entrepreneurship Development Cell (EDC) – The National Institute of Engineering
Small-scale industries	More than 300 new companies register in Mysore each year (Details of Medium and Large Scale Industries, 2009; Small Scale Industries Registration Details, 2010). A plot of new companies registered each year, between 1991–1992 and 2009–2010 is illustrated in Figure 2.
Traditional industries	Silk, sandal wood, incense sticks and handicraft industries present in Mysore since centuries; tourism is a key contributor to existence and growth of such industries.
Information technology (IT) in Mysore: Highlights (Industry Performance Analysis, 2009; Annual Report 2008–2009, 2009)	
Software exports: Karnataka	34% of total exports from India
Software exports: Mysore	2% of Karnataka's total exports; more than total exports of 11 Indian states considered individually
Software exports: Revenue 2008–2009, Mysore	USD 292 million (37% increase from 2007–2008)
Software exports: Karnataka	Mysore: Best performing tier II city Followed by Mangalore (USD 183 million), and Hubli (USD 5.3 million)

Fig-6: Findings: economic indicators, Mysore city

Government bodies, policies/frameworks, development activities	
Mysore City Corporation (MCC) (http://www.mysorecity.gov.in)	Manages the civic administration, looking after engineering, health and sanitation, water supply, administration and taxation; established as a municipality in 1888, converted into a corporation in 1977
Mysore Urban Development Authority (MUDA) (http://www.mudamysore.org)	Established in 1903, as City Improvement Trust Board (CITB); amalgamated with the Local Planning Authority of Mysore, under Karnataka Urban Development Authorities Act 1987
Urban Development-JNNURM (Jawaharlal Nehru National Urban Renewal Mission) (http://jnnurmmysore.in)	Launched by Government of India in 2005, to create financially sustainable inclusive cities; Initiated planned development programme for Mysore, with a timeline of 20–25 years, and five-year intermediate milestones
Mysore Vision 2025 (interview with MCC Staff, February 2010)	Aims to promote model growth of Mysore city, retaining its value as heritage and cultural capital; MCC's vision is to develop Mysore on European model. The vision focuses on heritage conservation, providing basic services for urban poor, development of infrastructure (drinking water/sanitation etc.), community facilities (social security, education, etc.), and improving tourist destinations.
Civic infrastructure: transportation	
Intelligent transport system for public transport ('Intelligent Transport System for KSRTC: Mysore – Detailed Project Report', 2008)	Based on GPS and plans to cover 500 buses, 80 bus-stops and two bus terminals.
Innovative Environment Project for public transport ('Innovative Environment Project for Mysore City – Detailed Project Report', 2008)	Ethanol mixed diesel is used to run buses to reduce pollution levels.
Air connectivity	Mysore Airport was renovated and air-services have resumed.

Fig-7: Findings: civic administration and civic infrastructure Indicators, Mysore city

4.2 DATA COLLECTED FROM PRIMARY SOURCES

4.2.1 Survey on loyalty of Mysore residents towards the city

4.2.1.1 Methodology

A survey including individuals between the ages of 17 and 30 who were inhabitants of Mysore—both native-born citizens and immigrants—was carried out. A total of sixty-one responders were selected at random from the city's graduate schools. They had to respond to three inquiries, which were as follows:

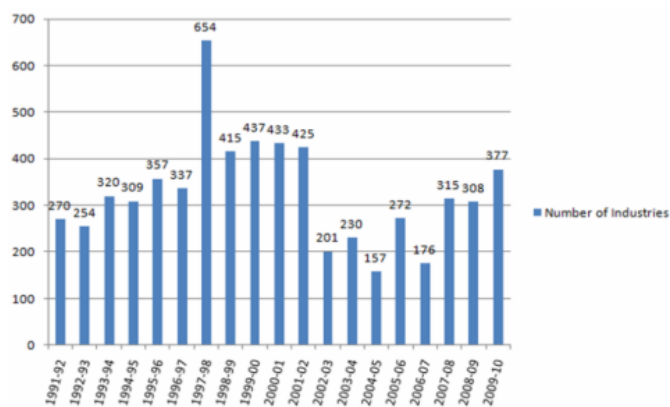


Fig-7: Number of new small-scale industries registered in Mysore, between 1991–1992 and 2009–2010 (see online version for colours)

Fig-8 displays the survey's results. It was found that 49% of the respondents were Mysore natives, with the remaining respondents coming from other Indian towns. Three respondents who were local to the area said they disliked Mysore in general, but five respondents who were not native to the area had the same opinion. When asked which city in India they would want to settle down in, just 19% of respondents who were not local to Mysore—six respondents—selected Mysore over any other city. This compares to 85% of native residents of Mysore.

Question	Mysoreans	Non-Mysoreans
Where are you from?	From Mysore: 30 (49%)	From other places: 31 (51%)
Do you like Mysore?	Like: 27 Dislike: 3	Like: 26 Dislike: 5
If given a choice between Mysore and any other city in India, where would you rather settle down?	Mysore: 26 Any other city: 4	Mysore: 6 Any other city: 25

Fig-8: Results of the 'Loyalty towards Mysore' survey

3. CONCLUSIONS

This study has partially addressed research question R1 by creating the framework utilizing larger indicators, negating the requirement for evolutionary refinement to create a thorough model. The deduction of the KCI score for Mysore from the research question R2 suggests that the city possesses the necessary components to be considered a knowledge city. Nevertheless, it is also evident that the city's remarkable achievements in the fields of culture and tourism are the primary drivers of the score. It is important to realize that, even though Mysore is home to a large number of research institutes, the quantity of knowledge produced a crucial indicator of a knowledge city is by no means noteworthy. The steadily expanding number of new sectors and software exports, however, are indicators of the business and commerce sector's positive growth.

Mysore is in moderate compliance with the framework's guidelines, according to a cursory review of the city in relation to the MAKCI framework. Mysore city's current situation cannot be directly analyzed using the MAKCI framework, which was primarily meant to analyze cities from industrialized countries, because it falls behind in terms of fundamental infrastructure. Thus, the government of the city should concentrate on bolstering the physical infrastructure going forward, with the ultimate objective of becoming a knowledge city in mind.

In the future, the government should also implement a city-level information and communication technology (ICT) policy that emphasizes residents' digital literacy and raises their access to information. The first step in developing a fleet of knowledge workers—the cornerstones of a knowledge

city are having more informed citizens. By finding a nearly comprehensive collection of criteria that help define these indicators more precisely, the project's future work aims to provide very granular indicators. The success of this initiative also depends on the Mysore municipal administration's proactive involvement in including the public as stakeholders and creating a thorough development plan that would establish Mysore as a knowledge city.

In conclusion, it can be said that though culture and traditions are inherited, the other pillars of a knowledge city have to be established and sustained. So, the onus now, is on the civic administration to plan for the overall development of the city and implement such plans appropriately. It has to be understood that the transition of Mysore into a knowledge city is best possible on the foundation of its culture and tradition, and not at their cost.

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