

The role of universities in attaining regional competitiveness under adversity – a research proposal

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Abstract

This study examines the role of the university in attaining regional competitiveness in technology in periods of extreme adversity such as has been the case in the post-Hurricane Katrina situation in New Orleans and the Gulf Coast. In such situations, much can be learned from the experiences of developing nations which have successfully attained technological leadership in specific niches. University leadership will be important in several arenas. Teaching and research will need to be targeted to regionally-important areas. The research findings must be transferred to organizations which can exploit opportunities and develop needed technologies. Universities can serve as both disseminators of information and as collaborators in the process. Universities can both spark new businesses and support existing businesses. To determine what is needed and where the niches are, we highlight the importance of text mining of publication and patent databases. Text mining can identify regional strengths upon which competitive advantages can be built. In this paper, we propose research using text mining to identify regional strengths and opportunities.

Keywords: text mining, competitive advantage, Hurricane Katrina, technology, universities

Introduction

In our knowledge-based economy, economic growth is related to technological competitiveness. What is required to achieve technological competitiveness? The I-10 Corridor, which extends along the Gulf Coast of Louisiana, Mississippi, and Alabama, has traditionally lagged in technological development. The recent impact of Hurricane Katrina on the region's infrastructure, environment, and economic conditions has led to significant further decay. Is it even reasonable for such an area to expect to attain technological competitiveness? The focus of this article is upon the potential role of the university in promoting technological competitiveness and regional economic development in the I-10 Corridor.

Technological competitiveness appears to be fueled by science and scientific development. Does scientific growth consistently translate into economic growth? From the perspective of public policy, a key set of issues centers on finding avenues for transferring breakthroughs in science to organizations which could potentially put the knowledge to use. The university can play an important role in the dissemination of knowledge and thus act as a driver of innovation. Our proposed research provides a model to guide this process.

The I-10 Corridor can be thought of as a region which, post-Katrina, is encountering economic conditions which, in many ways, make it resemble a less-developed country more closely than a thriving industrialized locale. We can look at insights offered by the body of research which has examined the relations among economic, scientific and technological development in less-developed nations to see what may be applicable. In general, issues in this literature center upon whether developing nations should simply try to "catch up" by imitating the technology and methodologies of developed countries or whether they should engage in technology development in specific niches where they have the capability to lead. Are there lessons that the I-10 Corridor can learn from the successes of developing countries and what are the implications for universities?

Nelson (2004) has noted that, in the past, successful growth in developing economies has been characterized by a considerable "cross-border flow of people," where citizens go elsewhere to learn new technologies and then return to implement them or where experts come into the area to serve as mentors/advisors. Something similar to this phenomenon could occur along the I-10 Corridor if residents displaced by Katrina can be induced to return and if they return with new ideas. Moreover, since we are addressing regional innovation within an already innovative nation, there is the ability for the parties with the potential to lead development to move freely to the region, as can be seen with the hiring of Dr. Ed Blakely as New Orleans' recovery czar. Dr. Blakely is known for having orchestrated the recovery of the Bay Area after the 1989 earthquake.

Individuals in the I-10 Corridor can collaborate easily with technology leaders from more innovative regions. The challenge may be to find ways for the I-10 Corridor to both attract and keep talented individuals. The region's universities will play an important role in attracting talent and in collaborating with outside entities. For example, Blakely was also hired as a Visiting Professor at the University of New Orleans.

Lazonick (2004) cited the development of "indigenous innovation" in an analysis of China's success in "leaping" into the information age. Lazonick noted that a key factor permitting China to move rapidly into the information age was that foreign computer companies had not yet mastered the problem of Chinese-language word processing. When Chinese companies were able to achieve mastery in this area, they controlled a dimension of computing

which enabled them to become world leaders. The lesson here rests in China's ability to turn uniqueness into competitive advantage. In the same vein, the I-10 Corridor must identify its own unique areas that can result in a regional advantage. Potential areas may rest in the unique cultural and political dynamics of the area, and/or in a unique understanding of living in vulnerable coastal areas, and/or in unique experiences from Hurricane Katrina. China used its uniqueness to provide an opportunity to engage in more far reaching innovative research (Lazonick, 2004). Are there potential niches where research along the I-10 Corridor can result in leadership? Is the area already a research leader in technologies that are not being harnessed for economic advantage?

Universities can play two major roles in the development process. They can produce research which is aligned with the needs of the region and is relevant to the local economy. In locations such as the I-10 Corridor, universities need to focus upon innovative research activities which improve the quality of the regional environment. In the I-10 Corridor, this includes research that impacts the traditional areas such as tourism, or more broadly, the service sector, biomedical research, coastal/environmental issues, and oil and gas. It may also include new areas that have taken on increased relevance post-Katrina - areas such as construction, any type of infrastructure, public service, economic building/rebuilding, disaster logistics, and business continuity/flexibility.

The university can also utilize its heritage as a collaborator to transfer regional study results and innovative research from the university to the community. The transfer may take one of three forms: teaching students, sparking business ventures, and conducting policy-relevant research. Universities must ensure that their curricula and programs are such that they are training students in innovative techniques relevant to the region. Universities should become active in the development of business ventures, either sparking new ventures or working with existing small businesses to support their innovation needs and to transfer technologies out of the academic realm and into the commercial realm. Universities can work with existing small businesses to implement, develop, or market new technologies. Initiatives such as the University of New Orleans' College of Business Administration's Center for Innovation (www.CFI.uno.edu), an initiative that links faculty expertise to the needs of returning entrepreneurs, are mechanisms that can be utilized to transfer faculty knowledge into to the community. Other similar university-industry linkages can have major impacts on the economic development of a region.

Research Proposal

Key elements in the university's impact are its success in collaboration and its success in disseminating information on what is being done in the region. Needed regional analyses involve consideration of the innovation infrastructure of the region, essentially, what is being done, who is providing the leadership in research, what the relationships are among the various academic institutions, government agencies, start-ups, business organizations, research and development organizations, and a host of similar actors, as well as analyses of the potential areas of developmental strength which are not receiving adequate research or economic development focus. Assessment of the regional competitiveness of the I-10 Corridor requires analysis of current regional innovativeness and of the post-Katrina condition of the Gulf Coast. Doing this involves looking at regional competitiveness indicators, broad factors such as research intensity, innovative capacity, and the like. This research can begin with the development of a *knowledge*

assets profile of the region, to determine universities, institutions, and researchers which are active in the region and existing institutional relationships. Needed, as well, is an *area position analysis* which would examine researcher accomplishments in the context of work which is underway nationally and/or internationally, to determine what work being done in the region is at the forefront of ongoing research. Once such analyses are in place, the information can be used to highlight the areas of potential strength which are not receiving adequate economic development attention.

In conducting an analysis of the region, technology mining, or text mining of publication and patent databases, offers a new application of an approach that has been primarily used for national policy decisions and corporate decision-making. This important meta-analytical technique provides a needed macro-level perspective. Shapira and Youtie (2006) found that publication and patent counts were useful both for characterizing innovation clusters at the regional level and for providing leading indicators of technology employment. What we suggest for the I-10 Corridor is a text mining analysis of the intellectual assets (i.e. publications and patents) produced in the region. Text mining provides quantitative indicators of regional strengths. It is the kind of tool that university researchers need to process the huge amounts of information that must be organized to generate a framework for achieving competitiveness in the I-10 Corridor. Specifically, we propose research in which universities download abstract records from sources including Compendex and the USPTO patent data base from affiliations and innovators located in the Gulf Coast region and apply a text mining tool to create a Knowledge Assets profile for the region. This profile will, in turn, provide lists and maps which cluster entities within the region. Our hypothesis is that these maps will identify clusters which will indicate regional strengths. We believe that areas in which regional organizations are among the top ten nationally or globally can be identified from the clusters.

The research procedure involves the following steps:

1. Download abstracts and patents from the Gulf Coast Region.
2. Develop lists of the leading research areas and researchers in the region.
3. Map the publications and patents to identify core regional topics.
4. Compare the regional profile of a core topic to the topic's national profile.

Information on regional strengths can be used to influence organizations that are considering business opportunities along the Gulf Coast and to influence economic development investment decision makers. The challenge involves translating the findings into policy recommendations and "getting out" the findings to governmental and organizational decision makers to have them acted upon. The results of such analyses must be communicated clearly to all of the relevant stakeholders, there must be support from the appropriate governmental agencies to enable appropriate action, and the appropriate organizations must be willing to act upon them.

Conclusion

The I-10 Corridor, the focus of discussion in this article, although not alone in its regional need to "catch up" to reach a position competitiveness in the knowledge-based economy, faces unique challenges after the devastation caused by Hurricane Katrina. However, the devastation also provides a unique opportunity for the region to assess its assets and apply knowledge gained from the efforts of newly-industrialized countries to embrace their lack of infrastructure and technologically "leapfrog" more advanced regions. The crucial role of the university in this

transformation process has been discussed. The university can play a key role, not only in producing innovative research that can contribute to the rebuilding of the infrastructure, but also in conducting the type of research that can inform policy decision makers. Universities must focus their research on regionally relevant areas, adjust programs and curricula to support these regional interests, and work with government and business entities to transfer relevant research into the commercial realm.

Moving beyond this perspective, what may emerge as the most daunting task may not be the difficulty of determining the appropriate niches or even getting the cutting-edge research done. The key issues may involve disseminating the information to all of the parties at interest – scientists, politicians, organizational leaders and potential entrepreneurs especially, along with getting that information acted upon in a coordinated way.

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