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Is there a difference between information technology in Latin America and that of the rest of the world? This is not an easy question to answer. Arguments can be made either way.

In arguing against significant differences across countries one can emphasize the importance of globalization and the availability of basically the same technology throughout the world. Leading manufacturers of information technology are global and, as a result, individuals in most countries can purchase these systems. Information infrastructure is also developing rapidly. The differences that once existed, in terms of the quality and quantity of networks in different countries, are rapidly narrowing. Prices for IT related products are decreasing and networks have increasing bandwidth capacity to accommodate the demands of an information society.

If all nations have similar infrastructures and access to similar technology, why is it necessary to make geographical distinctions? In this respect other non-technology related factors start to play a role. As was discussed at a panel at the 1997 ICIS Conference involving Reinhard, Palvia, Gricar, Gupta, and Kaul, less developed countries show important differences with developed countries in terms of availability of resources, IT expertise, and political and managerial cultures. It is nonetheless true that each country has different resources, regulations, and culture and one could argue that the field should be separated at a country level. The following question is key: are regions sufficiently similar to grant a separation on the basis of a region? The review of papers that have been generated in this area may help to generate an answer.

At the most basic level there is a set of articles that describe the state of information technology in Latin America. Papers by Ruelas (1995), Rodríguez (1995), and Fernández (1995), are good examples. For the most part they provide descriptive studies of the state of infrastructure in Latin America. Specifically, Ruelas' book *México y Estados Unidos en la Revolución Mundial de las Telecommunicaciones* (Mexico and the United States in the International Telecommunications Revolution) is a detailed study of the state of telecommunications in Mexico. It provides information about technology and the process of deregulation of the telecommunications market of Mexico and the United States. In a similar line of research is Fernandez' paper, which gives information about Mexico's Internet infrastructure such as nodes, locations, and speeds as well as the location of major servers across the country. The last part of the paper briefly describes the uses that the WWW has had in Mexico, which at that time was educational and, to a lesser extent, commercial. Rodriguez' paper is a good source to find key indicators about IT infrastructure in Latin America, specifically GDP per capita in each of the countries of the region, percentage of people with Internet access, cable TV, PCs, as well as other relevant indicators such as number of mobile phones and Internet hosts. A paper by Morgado, Reinhard, and Watson uses Q-sort and interpretive structured modeling to identify the key factors that concern IT managers in Brazil. This paper's contribution to the field is the ability to identify critical IT issues taking into consideration the non-homogenous nature of the people involved in IT decisions.

A weakness of the papers in this group is their potentially rapid obsolescence. Change in information technology is happening at such a rapid rate that any writing describing the current status could be out of date within a few years. Although none of these papers makes a comparison with other regions, it is clear from

Rodriguez's paper that there are differences with developed countries in terms of resources and that this situation is repeated throughout the region.

Another related set of papers provides greater detail in terms of government efforts in the region to enhance the deployment and further development of information and communication infrastructure. Specifically, the papers by Marinho (1997) and Aranda (1999) provide an account of the Brazilian and Paraguayan government initiatives to make the Internet accessible to poor regions and segments of the population. In Brazil this was accomplished by the Citizens Network, which was established as a result of government and private funds to provide free Internet access to the municipality of Recife. Since its creation in 1993, the network has been maintained and upgraded to provide better and faster access to Internet resources. The government of Paraguay, in cooperation with the United States Agency for International Development, is opening centers with access to computers and the Internet. These centers, called Amic@s, are located strategically in places where poverty persists. The purpose is to provide these people alternatives to otherwise unproductive and damaging activities. These two papers indicate some problems that are shared across the Latin American region. In this respect Aranda claims that "The majority of Latin American capitals face a similar social, economic, and political situation as Asunción: underemployment, under funded public schools and shanty towns …"[1]

At a more theoretical level, and related to the issue of resources, there are papers that give some indication of the unique political, economic, and, social circumstances that pose challenges to the implementation of IT in these countries. The two representative papers are Jarvenpaa and Leidner (1997) on the adoption of IT in a newspaper and García-Murillo (2000) on electronic commerce. In both instances the articles allude to cultural and political issues.

Jarvenpaa claims that the lack of objectivity on the part of Mexican journalists and the relationship of the newspapers to the ruling party has created obstacles for the innovative use of IT in newspapers. He relates that the newspaper hired a large number of recently graduated journalists to eliminate the bias of the newspaper in addition to implementing an on-line version to overcome the distribution resistance that the newspaper was facing from its critics. García-Murillo looks at the economic factors that have affected the implementation of electronic commerce in Mexico, specifically the lack of financial resources for both entrepreneurs and potential Internet buyers. She suggests taking advantage of the resources available in other countries, specifically the U.S., to complement those available at home. Both of these articles present innovative solutions that firms used to overcome obstacles and give some evidence of the differences that a less developed country has compared to developed ones. There is, however, no indication that these differences are being shared with other Latin American nations.

Related to the issue of newspapers, but at a more descriptive level, the article by Morfin (1997), presents the reasons why the dailies decided to start providing an on-line alternative to their paper versions. In particular Morfin points to benefits of this move. Some expected ones are increased audience and the possibility of updating the material at any time. Unexpected benefits for the journalist include easier and more instant access to news leads and communication with the editors. The paper did not explain the challenges and negative effects that the company experienced as a result of having an on-line version.

Another set of papers that look at the implementation of IT into a specific industry sector are Navarrete (2000) and Montealegre (1997, 1998). Navarrete's paper focuses on the implementation of IT in the Mexican banking industry while Montealegre's focus is the Guatemalan sugar industry. In Navarrete's paper the objective is to determine if IT investments lead to increased productivity for the banks

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[1] Translated from Spanish.

under study. The results indicate that IT investment had no impact on bank financial performance but found a significant correlation of IT investment and market share. His was the first study to analyze the productivity paradox within the context of a less developed country. Montealegre's papers provides greater detail with respect to the implementation of IT. He looks at the impact of technology on organization. Specifically he analyzes the interplay between technology and social structural change within the firm. His other paper analyzes the role of managers in the implementation of IT projects. He points out that one of the difficulties is the lack of a trained workforce, which could hinder assimilation. He does, however, show that successful IT implementation is possible in less developed countries.

The last papers reviewed here are from scholars that look at more specific technologies and the way that they have been implemented in Latin America. In this realm, the papers by Leidner (1996), Mejias, et.al. (1997), McCoy and Everard (2000), and Ferreira and Walmir (2000), are representative of this group. Both Leidner and Mejias, et. al., focus on Mexico and attempt to determine if cultural differences with the U.S. lead to positive results in the implementation of executive information systems (EIS) and group support systems (GSS). Leidner studies the impact of EIS systems in Mexican firms and concludes that an EIS system works well as a complement to the channels of communications that exist in a high context society. She determines that EIS systems are useful for faster decision making, improved understanding of the business, and increased analysis. Mejias, et. al., who also tests

the impact of a high context culture, conclude that GSS systems within the Mexican context work in a similar way to those in the United States. According to their study, a GSS system leads to a greater number of comments and unique ideas. They argue that this may have been possible because the system neutralizes, to a certain extent, the power relations common in Mexico. This study, however, has weaknesses related to the fact that the GSS system was tested with students who are at the same hierarchical level. Thus, there are no power relationships among them. The finding that the manual system leads to lower comment production may be related to the fact that personal conversations can deviate while a GSS may force more focused discussions.

Research about information technology in Latin America comes primarily from scholars in the United States and Latin America. Mexico and Brazil have been the focus of the largest number of studies. The scope of the research varies from being descriptive and general to theoretical and focused. The trend of the research is towards more focused studies that tend to determine the effectiveness, impact, and adoption of specific technologies. One surprising factor is to find that, in spite of some common themes, there has been little collaboration among these researchers. Hopefully the Association of Information Systems (AIS) will become a forum for greater collaboration.

Is Latin America different? This is not an easy question to answer but the evidence indicates certain differences. Unless a study can show the contrary we are likely to benefit from the work of scholars that concentrate in the region.

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