Information Technology in Maquiladoras: An Exploratory Study of Usage and Perceptions

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ABSTRACT

Mexico’s assembly operations, accelerated by the North Atlantic Free Trade Agreement (NAFTA), have been much of a debate in recent years. Manufacturing outputs and employment in maquiladoras declined in 2000s, much of which could be attributed to an occurrence called the “China Syndrome”. Mexican maquila operations and jobs are now going to China and other low-wage countries. Are maquiladoras technologically competent to ward-off competitive forces from China and other parts of the world? This article aims to present an exploratory study of IT usage and managerial perceptions of IT-related costs and benefits in maquiladoras. The relevant data was gathered through a survey questionnaire. The results show that IT had a positive impact on maquila business performance. These findings will be useful to managers in assessing their organization and taking corrective actions to become more competitive.

Keywords: information technology; maquiladoras; survey; US-Mexico trade

INTRODUCTION

The normal business practices dictate that manufacturing companies relocate their production bases from country to country in response to economic opportunities. Many companies, in fact, have set up production facilities in foreign countries to take advantage of lower labor costs, thus saving significantly in operating expenses. In recent years, not only the cheap labor market, but also the availability of IT skills in a foreign country has been a significant consideration in relocating production bases. One should be aware that, at a global level, IT has changed the business perspectives and practices forever; the manifestation of which is IT-enabled or Web-enabled business, e-supply chain, e-collaboration, and so forth. From policy makers’ view point, it is imperative to decipher the overall business environment (economic, technical, social, and political) in a foreign country before making long term business decisions. Given the IT focus of this article, the authors argue that policy makers must understand the complexity in making judgment regarding the IT infrastructure in a given country, and how
IT (and its many facets) plays into the overall business decision.

The Global Information Technology Report (Dutta, Lanvin & Paua, 2003) provided a means to combine various facets of IT and building a framework for comprehensive assessment of IT readiness for a country. The report used both quantitative data and qualitative information in measuring a readiness index for each of 82 major economies of the world. As defined in the report, the Networked Readiness Index (NRI) is an aggregated measure of the potential and degree of preparation of a nation within its encompassing environment to participate in the networked world. Nations could be ranked on the basis of the numerical value of the index and compared among each other with a view to developing IT policies for the future. The Index is a composite of three components: the \textit{environment} for ICT (information and communication technologies) offered by a given country; the \textit{networked readiness} of stakeholders (individuals, business, and government) to use ICT; and finally, the \textit{network usage} of ICT by the stakeholders. As expected, the ranking between the U.S. and Mexico differs significantly in all indexes (see Table 1). A wide gap exists between the two countries in IT environment, readiness, and usage, and this might indicate that Mexico might not be a place for U.S. companies to develop business ties. In reality, however, U.S. companies established strong presence in Mexico, particularly in the border region. In the past decade, Mexico surpassed Japan to become the U.S.’s second largest trading partner (Sargent & Matthews, 2003).

As the IT environment, readiness, and usage between the U.S. and Mexico businesses differ widely, how Mexico’s maquiladoras are managing IT-related issues with their business partners in the USA? In the literature, however, very little has been found on the effect of IT on operational, technological, and management issues in maquiladoras. Thus, to address this gap in the literature, the main objective of this research has been to study maquiladoras and present a comprehensive view of their IT-enabled operational and business practices and perceptions of management.

The survey methodology was used in this research. First, an extensive literature review was conducted to identify the factors supporting and inhibiting the growth of maquila businesses. Second, based on the literature review and personal experiences of the authors with maquila businesses, a questionnaire was designed and distributed among the maquiladoras. The survey was intended to gather information on such things as plant IT usage, quality, and costs of IT, overall IT benefits to plants, and so forth. Finally, the survey responses were analyzed and presented in this article.

**SIGNIFICANCE OF MAQUILADORAS**

Since the early 1960s, maquiladoras have been in operation along the U.S.-Mexican border regions. The majority of the maquiladoras are owned by American businesses. To secure operational and cost advantages, these companies have set up labor intensive plants in the border region. Maquiladoras are typically assembly plants located in Mexico that receive semi-finished parts/components from American companies, finish the assembly, and then

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**Table 1. Network readiness rank (Source: Dutta et al., 2003)**

<table>
<thead>
<tr>
<th></th>
<th>NRI Rank</th>
<th>Environment Component Index</th>
<th>Readiness Component Index</th>
<th>Usage Component Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Mexico</td>
<td>47</td>
<td>60</td>
<td>52</td>
<td>37</td>
</tr>
<tr>
<td>Canada</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>10</td>
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