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# **An Investigation of Telecommunications as a Plant Location Decision Criterion**

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## **ABSTRACT**

*The concept of site selection has received extensive attention throughout history. Although plant location decision issues have always been important to US manufacturing firms, the impact of global competition has increased recognition of their importance. To successfully compete globally, manufacturers must have an effective global supply chain infrastructure, which requires effective communications. However, plant location strategies change over time, because of the dynamic nature of the variables that determine a location decision. This study was conducted to extend the location decision taxonomy by including telecommunications. The research included a specification of telecommunications attributes that impact site selection, the importance of telecommunications as a location decision criterion and the differences in location decision criteria between domestic (US) and foreign sites. The telecommunications-specific attributes determined in this study include: telecommunications infrastructure, cost, reliability, bandwidth, personnel, local and US government restrictions, and local and US government regulations on exporting and importing data. The conclusions of this study not only present evidence that telecommunications is influencing decision-makers in site selection, but also provides a list of criteria that are critical to site selection.*

*Keywords: content analysis; location; management information systems; MANOVA; site selection; telecommunications*

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## **INTRODUCTION**

Since the early 1800s, a great deal has been written about industrial site selection. Plant location is critical to a new firm entering a market or to an old firm introducing a new process or product. Many factors must be considered when choosing the right manufacturing location.

These factors can vary considerably from company to company, depending on each firm's strategic plans, products and markets. Plant location strategies change over time because of the dynamic nature of the variables that go into a location decision.

A number of studies have focused on specific issues of location decisions, such as transportation, labor and proximity to

market (Ulgado, 1996; Tong, 1979; Daniels, 1970). These studies have indicated that some issues are important to all companies, regardless of what they manufacture or sell. Despite the many factors reported by researchers, one potentially important factor that was not included in previous studies was telecommunications; or, if considered at all, telecommunications was grouped with physical infrastructure. However, in today's global market, the ability to electronically communicate with customers, suppliers and strategic partners is a necessity (Zienert, 1995). As noted by Mike Meissen, president of the National Rural Economic Developers Association (NREDA), "developing a better, faster communications infrastructure is one of the biggest changes we've seen in a long time" (Bastian, 2002). Due to this changing environment, a logical extension of the existing location decision taxonomy is the addition of telecommunications.

Selecting the right plant location is a managerial decision of primary importance throughout the manufacturing industry. Organizations consider site selection to be critical to the success of the company (Ulgado, 1996; Tong, 1979). Because of this industrial focus, and to place boundaries on the project, this research considered only the manufacturing industry.

### Research Problem

Karaska and Bramhall (1969, p. 10) stated that "the location problem of manufacturing has been formulated as a decision by management to select the best site at which to locate or relocate an establishment." This view has been echoed throughout literature (McPherson, 1995; Ward & Ward, 1991; Swamidass, 1990; Newman & Sullivan, 1988; Bartik, 1985; Schmenner, 1982), and empirical studies (Ulgado, 1996;

Tong, 1979) have been conducted to determine the specific factors associated with site selection. None of these studies directly addressed the issue of the impact of telecommunications on site selection.

Researchers have discovered that the importance of plant location factors changes over time (Ulgado, 1996). The existence of the various location theories and the dynamic nature of plant location factors offer justification for an updated investigation of site selection. Therefore, the goal of this study was to address the following research questions:

**R1:** What are the important telecommunication-specific attributes that affect the manufacturing location decision?

**R2:** Does the importance of telecommunications as a location decision criterion differ between domestic (US) remote sites and foreign sites?

This study empirically examined current plant location decision criteria, including telecommunications. The direct contribution of this study to existing research is the determination of telecommunications attributes that influence the decisions to select manufacturing sites.

### SITE SELECTION

Previous research indicated that primary management issues in making a plant location decision started with modes and cost of transportation, and shifted to costs of labor. However, one of the greater challenges facing management in the current global market is the management of the supply chain and distribution systems. An effective supply chain management system requires effective communication capabilities. One criterion that is becoming increas-

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