Introduction

In recent years, considerable attention has been focused on the effect of the alignment of a business’s strategy and its information systems on the success of information system implementation. Henderson and Venkatraman (1993) contend that “the inability to realize value [as a measure of IS implementation success] from I/T investments is, in part, due to the lack of alignment between the business and the I/T strategies of organizations.” This issue is more complex in firms that engage in international business activities. Alignment of a business’s global business strategy and its global information systems is difficult to achieve because of the added complexity created by the international aspects of its information systems. The effect of attaining such alignment on system success is, therefore, an even more important question for international businesses than for domestic businesses.

Although the issue of strategic alignment has been studied by others (e.g., Luftman 1996), little attention has been paid to global business strategy and global information systems. As companies increasingly engage in international business activities, examination of global strategic alignment becomes more significant. The purpose of this research is to examine whether the alignment of global business strategy and global information systems correlates with successful system implementation.

Information System Implementation Success

Cooper and Zmud (1990) present a model of IS implementation that incorporates social and organizational attitudes toward the system. The stages of their model are initiation, adoption, adaptation, acceptance, routinization, and infusion. The first three stages characterize the initiation and implementation of the IS: Initiation involves the process of selecting an IS to be used in the organization, adoption involves securing support and resources for IS implementation, and adaptation includes all activities required to make the IS available for use in the organization. The last three stages of the Cooper and Zmud model characterize levels of implementation success of the information system: Acceptance covers the process of convincing employees to use the IS, routinization characterizes the IS’s transition to a normal part of work activity when other business processes are adjusted to coincide with the IS, and infusion marks the reaching of increased effectiveness through full integration of the IS into the business and full utilization of its potential. These final three stages can be used as a measure of implementation success.

The effects of different factors on the success of IS implementation have been examined by a number of researchers. Kwon and Zmud (1987) provide an extensive review of almost 100 studies and papers on this topic, but the research they examined does not present a consistent positive or negative correlation between any factor group and implementation success. Umanath and Campbell (1994) suggest that, within a global context, a combination of societal and organizational factors can explain differences in the speed at which information system technology diffuses throughout different country units of an organization.

Strategic Alignment

An emerging body of literature has suggested that the alignment of an IS with business strategy is possibly more important than other factors in determining the success of the IS implementation. Much of this literature measures implementation success in terms of value added to the organization. Henderson and Venkatraman (1993) found in their research that lack of alignment between the organization’s business and IT strategies is a key reason organizations fail to achieve full value from the resources invested in information technology. They propose a strategic alignment model to account for various aspects of strategic fit and functional integration between business and IT.

Ives, Jarvenpaa, and Mason (1993) define global business drivers (GBDs) as “those entities that benefit from global economies of scale and scope, and thus contribute to the global business strategy.” Once agreed upon, these GBDs “form the basis for the IT strategy and an applications portfolio” and identify what business entities will derive the most value from IT investments. They assert that “if information technology is to add value
to international business operations, it must be applied through the firm’s global business drivers.”

Research Model

We now propose a model that links global strategic alignment with global IS implementation success. Cooper and Zmud’s model of IS implementation maintains that an IS is most successful when it is fully infused into business processes. Henderson and Venkatraman’s strategic alignment model and Ives, Jarvenpaa, and Mason’s work on global business drivers suggest that organizations will achieve greater value from information systems that support business strategy and processes than systems that are not aligned with business strategy. Combining these two perspectives within the context of global information systems gives us the research model shown in Figure 1.

The model suggests that global information systems that are not aligned with the global business strategy face uncertain progress through the implementation process. As a result, it is uncertain whether the global IS will reach ultimate infusion and add value to the organization. On the other hand, if the global IS is fully aligned with the company’s global business strategy, the path through the implementation process to ultimate infusion is much more predictable, and the value added to the organization from the information system is likely to be significant.

Survey Instrument Design

The research model was used as the basis for the design of a survey instrument to examine whether the alignment of a company’s global information systems and its global business strategy correlates with the success of the company's global information system implementation. (Because of space limitations, the survey instrument is not included in the paper. A copy of it is available upon request from the second author.)

Survey respondents were first asked to rate, on a seven-point scale, the importance of a list of seven global business capabilities to their companies' global business strategies. The Ives, Jarvenpaa, and Mason (1993) analysis of global business drivers was drawn upon in the development of these capabilities. Respondents were also asked to mark the number of years that the capability had been considered important if the capability was given an importance of 4 or more.

Then respondents were asked to identify their companies’ level of implementation (none, outsourced, under investigation, being implemented, or operational) for a list of seven global information systems. For operational systems, the number of years the system had been operational, the system’s level of usage (accepted, routinized, or infused), and the perceived added value of the system (none, little, some, or great) were requested. The usage and value scales were intended as measures of the system's implementation success beyond basic operation.

The two lists of global business capabilities and global information systems were constructed in pairs to create a one-to-one relationship between each capability and an information system that would typically be needed to provide that capability. These pairs are given in Table 1. Again, the Ives, Jarvenpaa, and Mason (1993) analysis was used in the development of these matches.
Table 1. Global business capability and global information system pairs

<table>
<thead>
<tr>
<th>Global Business Capability</th>
<th>Global Information System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinating purchasing globally.</td>
<td>Suppliers/Purchasing Needs</td>
</tr>
<tr>
<td>Producing different parts of a product in various locations around the world.</td>
<td>Production Plans</td>
</tr>
<tr>
<td>Bringing together the expertise of knowledge workers around the world.</td>
<td>Workgroup Collaboration</td>
</tr>
<tr>
<td>Marketing products globally.</td>
<td>Market Research/Sales Data</td>
</tr>
<tr>
<td>Managing the company’s financial assets globally.</td>
<td>Financial Assets</td>
</tr>
<tr>
<td>Moving inventories around the world quickly and efficiently.</td>
<td>Distribution/Logistics</td>
</tr>
<tr>
<td>Providing seamless transaction processing for global customers</td>
<td>Customer Account Information</td>
</tr>
</tbody>
</table>

The research model (Figure 1) predicts that the importance of the global business capability will be related to the implementation level, usage level, and value added of the corresponding global information system. Respondents were asked the number of years each capability was considered important and the number of years each system had been operational, because time was anticipated to have a mitigating effect on the results.

**Pilot Test**

A pilot test of the survey instrument was conducted by sending the survey to CIOs and IS Managers of 428 companies in the San Francisco, California area. Seventy-one surveys (17%) were completed and returned. Of these, 39 were from companies that had both international business activity and global information systems that were either planned or operational. The survey responses of these 39 companies were analyzed.

The seven capabilities were aggregated from each of the 39 companies to provide 273 observations of the strategic importance of the global business capabilities. These observations were compared with the implementation success as measured by the implementation level of the corresponding global information system. Of the 273 observations, 107 were for operational global information systems. These observations were additionally compared with the implementation success as measured by the system's usage level and value added. Analysis of the responses to the survey indicated that strategic importance was significantly correlated with implementation level in the full (all systems) data set ($r = .247$, $df = 271$, $p < .05$) and with the usage level ($r = .196$, $df = 105$, $p < .05$) and value added ($r = .212$, $df = 105$, $p < .05$) in the partial (operational systems only) data sets.

Further analysis of the operational systems found that the number of years an IS had been operational was significantly correlated with both the usage level ($r = .354$, $df = 105$, $p < .05$) and value added ($r = .237$, $df = 105$, $p < .05$). The number of years an IS had been operational was not significantly correlated, however, with the strategic importance of the corresponding global business capability. The number of years the IS had been operational was significantly correlated with the number of years the corresponding capability had been important ($r = .380$, $df = 105$, $p < .05$). By contrast, the number of years a capability had been considered important was not significantly correlated with any of the implementation-success scales or the importance of the capability.

**Conclusion**

The research model presented in this paper provides a way of understanding the relationship between alignment of global business strategy and global information systems, and the success of information system implementation. The pilot test of the survey instrument based on this model found a correlation between the strategic importance of a business capability and the corresponding information system’s implementation success. Further research is needed, however, with a larger sample of international businesses with global information systems to confirm the correlation. As a first step, we are currently surveying the Fortune 500 companies, conjecturing that these companies are likely to have initiated sophisticated global information system implementation efforts. We would also like to survey companies in Europe and the Pacific/Asia region.

**References**

References are available upon request from the second author.